

Refrigeration Service Engineer

TECHNOLOGY DEPT.
VOL. 11 NO. 2

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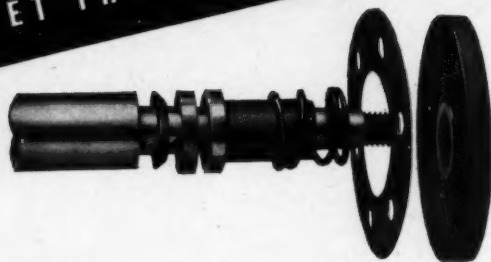
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Ask your jobber for
Chicago **Seals**
HE HAS THEM OR CAN
GET THEM FOR YOU!




There is no substitute for that feeling of satisfaction that is yours when you use **CHICAGO SEALS** for replacement on refrigerating compressor shafts. The self-adjusting sleeve-lock alone makes **CHICAGO** a better seal.

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CHICAGO, ILLINOIS

SAVE STEEL FOR

VICTORY

RETURN EMPTY  CYLINDERS

Steel is precious. Every pound counts in filling vital Victory needs. Little can be allocated now for new refrigerant cylinders. You can help Ansul and *all* manufacturers by returning empty cylinders at once . . . by keeping every cylinder *at work*. In doing this, you help the Nation, help yourself and help your customers. ☞ Keep every cylinder on the job . . . all the time!

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ANSUL

ANSUL CHEMICAL COMPANY • MARINETTE, WISCONSIN

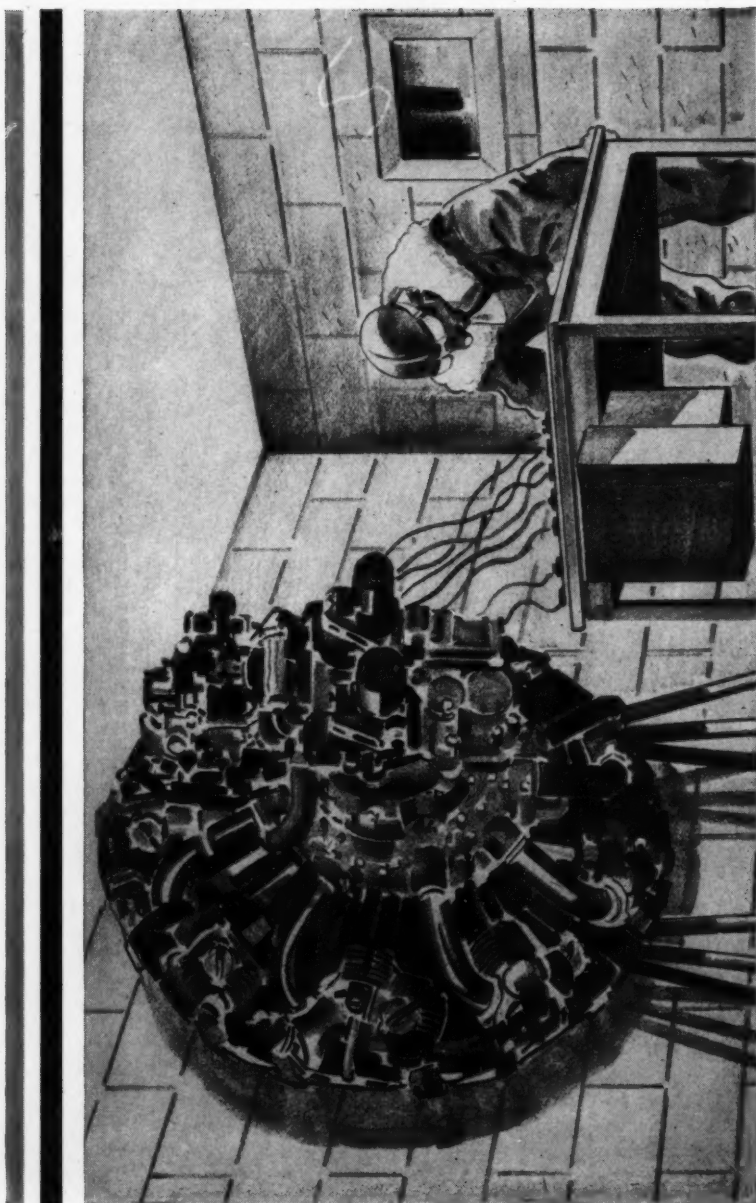
HELP YOUR JOBBER HELP US KEEP 'EM ROLLING!

February, 1943

THE REFRIGERATION SERVICE ENGINEER

1





February, 1943

2

THE REFRIGERATION

ARTIFICIAL WINTER—made to order

SE

APPLIC WINTER-made to order

TODAY ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

In mechanically refrigerated sub-zero test rooms, men in electrically heated clothing are constantly testing the performance of airplane engines, trucks, etc., to make sure that they will keep going at 40, 50 or 60 degrees below zero.

Results may be seen in the splendid performance of our tanks and trucks in arctic winter; of our planes in the extreme cold of high altitude flying.

This is but one way in which the refrigeration industry helps to keep the war machine rolling.

Detroit Expansion Valves and "DL" Controls are playing a vital role in this all important work and will continue to do so as the industry develops new and better uses for refrigeration.

DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN



TOMORROW

Sub-zero testing will be used more and more to produce better automobiles, trucks, busses and airplanes, that are truly "all weather".

Gone will be that cold-morning reluctance or obstinacy of your car. Gone will be the transportation tie-ups from busses which suffer from cold. Gone will be late deliveries and tied-up schedules caused by frost-bitten trucks. They'll be conditioned to winter. Data on low temperature operation being accumulated now will be added to data obtained tomorrow, for the guidance of design engineers.



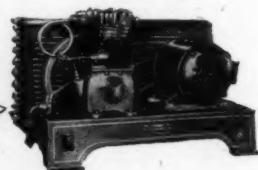
"... Back in '76, Americans thought the 'four freedoms' were worth fighting and working for. 167 years didn't change America's thinking any, either! I know all of us Brunner workmen are mighty glad we're part of that army of workers that is backing up our army of fighters."

And there are no two ways about it . . . commercial refrigeration has an important job to do today. Food of every description is now at a premium, and waste through spoilage must be avoided at any cost.

The long years of service that Brunner refrigeration equipment has

given to the Industry have made the name of "Brunner" a symbol of quality...dependable quality! That reputation has been made possible through the tireless, willing efforts of all the Brunner craftsmen who have always taken a fierce pride in their ability to do their jobs in the only manner they could see possible . . . to do their jobs the very best they knew how.

And they do know how!



COMMERCIAL REFRIGERATION

BRUNNER MANUFACTURING CO., UTICA, N. Y., U. S. A.

The Red Cross has Problems like your own

—of Planning

Your Red Cross operates a vast planning program to enable it to be ready for any disaster or emergency anywhere—whether it comes in the Americas, Europe, Australia, Asia, or Africa.

—of Organization

Your Red Cross is responsible for the smooth operation of 3,750 chapters and 6,000 branches, all engaged in the same enterprise of helping all who need help.

—of Personnel

Your Red Cross has tripled its staff since Pearl Harbor and has had to enlist the aid of and train over 6,000,000 volunteers in the principles of First Aid, Water Safety, Accident Prevention, Home Nursing, Nutrition, Nurse's Aideing, Mass Feeding, Motor Mechanics, and other subjects allied to our country's war effort.

—of Production

Your Red Cross is not only one of the world's foremost purchasers of supplies, but it has the immense distribution job of collecting millions of items from 10,000 different communities in the United States, assembling and storing them, and then shipping them to practically every country in the world. Last year your Red Cross shipped some \$60,000,000 worth of food, clothing, and medical supplies to over 20,000,000 homeless people in foreign countries.

—of Finance

Your Red Cross, whose war-time and post-war expenses will run well into hundreds of millions, must account to the public for every penny it collects and puts to work. Its accounts are audited annually by the U.S. War Department.

The Red Cross faces the same problems as are in your business. With your support it can successfully meet them.

The Second War Fund is greater than the First, but no greater than the increased needs.

Business men can help with time and with money, as organizations and as individuals.

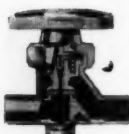
March is the Red Cross month... Cooperate with your Red Cross Chapter.

Your Dollars help make possible the
AMERICAN + RED CROSS

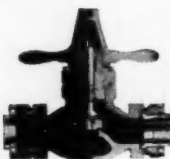
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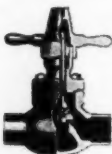
VALVES



**Balanced-Action
Diaphragm
Packless Valve
Type 626**



**Semi-Steel
Flanged
Globe Valve
Type 223**



**Wing Cap
Valve
Type 203**



**Relief Valve
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**Snap-action
Diaphragm**



STRAINERS



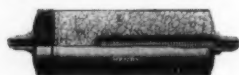
**"Y" Strainer
Type 895**



**Angle Strainer with Solder
Connection, Type 866**

DRYERS

Abso-Dry, Pressure Sealed



**Soldered Shell
Dehydrator, Type 712**



**Dehydrator with
Side Outlet, Type 756**

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HENRY VALVE COMPANY

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How the "Scotch Giant" can pull your business ahead in '43



*"Scotch Giant"
Condensing Units*

For Low Temperature Work — from minus 50 F. to minus 130 F.—there are G-E units operating in both single and multi-stage systems.

With industrial refrigeration's war production job growing bigger every day, the complete line of G-E "Scotch Giant" condensing units is being put to work in almost countless new ways.

Your business can grow with this trend. Investigate these new applications which help speed production, improve products, reduce rejects in war plants—and also those in laboratories which test all sorts of war products. Get these service agreements—help to keep production lines going day and night.

For details on the complete "Scotch Giant" line ($\frac{1}{4}$ to 125 hp.) write to General Electric Company, Air Conditioning and Commercial Refrigeration Department, Division 3712, Bloomfield, New Jersey.

GENERAL  ELECTRIC
"Scotch Giant" Condensing Units

COOPERATION WINS THE WAR



WOLVERINE SALUTES

Commercial Refrigerator Manufacturers

... for their outstanding work in the past, their patriotic cooperation in the War Effort, their courageous planning for the future.

The Commercial Refrigerator Manufacturers Association was founded in 1933. It now includes 30 member manufacturers, producing an estimated 80% of the country's standard commercial refrigerated display and storage equipment.

In meeting problems affecting the industry as a whole, the Association has established a reputation for successfully applying the "One for All and All for One" principle.

Much of the Association's work is done by committees. The Engineering Committee has developed and recommended many construction and design ideas; and since Pearl Harbor has been assisting our Government in preparing uniform specifications covering refrigerated storage equipment used by the armed forces, most of which is being furnished by the Commercial Refrigerator industry.

The C.R.M.A. Victory Committee was established for the purpose of working closely with the War Production Board and other war agencies in meeting such problems as the industry's necessary curtailments of production activities, conservation and simplification.

Wolverine, long a producer of highest quality refrigeration tube, has always cooperated wholeheartedly with the C.R.M.A., and takes this opportunity to salute such a worthy and progressive organization. Right now, the C.R.M.A. and the refrigeration industry as a whole are devoting all their resources, all their efforts, to just one objective—Victory. That's what Wolverine is doing, too.



MR. JOHN W. HART
McCray Refrigerator Co.,
President of the Commercial Refrigerator Manufacturers Association



WOLVERINE TUBE DIVISION
OF CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
Seamless COPPER • BRASS
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To the **ALCO** Valve of the Future

Today, working to rigid Army, Navy, and Maritime Commission requirements, tolerances of five ten-thousandths of an inch (.0005") in the manufacture of Alco products have become commonplace. Some "selective fits" are as close as .0001" —which is about one-fiftieth the diameter of a human hair! After the War, such precision which heretofore has been thought virtually impossible for commercial production will be applied to our standard products.

In many other ways Alco's Wartime ex-

perience will affect Alco products in the days of peace to come. Better methods of manufacture, better knowledge of metals and their application, even more rigid standards of precision engineering and production will be accepted procedure. The result will be even finer Alco products than we have produced in the past.

So, in your future post-war planning, don't overlook Alco. Our products and our engineering and research staffs will be able to serve you better than ever before.

ALCO VALVE COMPANY, 2630 Big Bend Blvd., St. Louis, Missouri



Engineered Refrigerant Controls

THE STANDARD OF THE INDUSTRY



Achievement by those "BEHIND THE LINES"

The workers of Ranco have been presented the Army-Navy "E" Production Award for their "behind the lines" part in the struggle for human freedom. It reflects the high type of unity and cooperation that exists between those on the fighting front and those on the production front.

At Ranco, every worker fully realizes the grave necessity of supplying precision equipment and weapons to those who are offering their lives. Among them are husbands, brothers, sons. We will not let them down.

The "E" Emblem on our lapels is recognition of a job well begun. It will serve as a challenge to bring forth even greater achievements till victory is won.

RANCO INC.
COLUMBUS - OHIO

The Refrigeration Service Engineer

Vol. 11

No. 2

February, 1943

A Monthly Illustrated Journal Devoted to the Interests of the Refrigeration Service Engineer in the Servicing of Domestic and Small Commercial Refrigeration Systems and Oil Burners

Official Organ
REFRIGERATION SERVICE
ENGINEERS SOCIETY

Cover

View of the production line at Weber Refrigerator Plant, Los Angeles, Calif. This company, winner of the Army-Navy Award, makes refrigerators for service everywhere. Article on page 57.

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SERVICE ENGINEER

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Hydraulic Action CONTROLS

WHAT IS HYDRAULIC ACTION?

It is the expansion and contraction due to temperature change, of a "solid liquid" charge against a single stainless steel diaphragm. This liquid charge remains in a liquid state throughout the entire range of the control and transmits positive movement to the switch.

WHAT ARE THE ADVANTAGES OF HYDRAULIC ACTION?

Accuracy regardless of changes in ambient temperature because of the minute portion of the liquid in the diaphragm and capillary as compared to that in the bulb.

Temperature setting not affected by change in altitude due to the non-compressibility of the "solid liquid" charge.

Position of the Hydraulic Action bulb, horizontal or vertical, above or below the control, will not affect its operation.

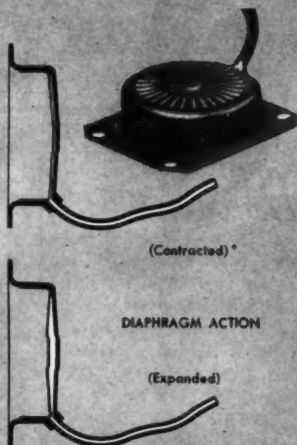


Type 1609. Hydraulic Action — for general applications. Range — -20° to $+50^{\circ}$ F. Adjustable differential 3° to 25° F.

WHITE-RODGERS ELECTRIC CO.

1203B CASS AVENUE • ST. LOUIS, MO.

Controls for Heating • Refrigeration • Air-Conditioning



The Hydraulic Action principle combined with the mechanical simplicity of White-Rodgers Controls assures you:

- EASE OF SETTING
- RAPID RESPONSE
- ACCURACY OF PERFORMANCE
- SIMPLICITY OF MOUNTING
- HIGH ELECTRICAL RATING
- TROUBLE-FREE SWITCH OPERATION
- IMPROVED APPEARANCE

The Refrigeration Service Engineer

Vol. 11, No. 2

CHICAGO, FEBRUARY, 1943

\$2.00 Per Annum

Preference Rating Order P-126 as Amended January 19, 1943

Covering Material for Emergency Servicing of Industrial and Commercial Refrigerating and Air Conditioning Systems.

HIGHER preference ratings are assigned for the emergency repair of refrigerating and air-conditioning systems used for specified purposes under the terms of Preference Rating Order P-126 as amended, the Director General for Operations has announced.

The amendment is a comprehensive revision of the original order controlling delivery of material for emergency repair servicing of industrial and commercial refrigerating and air-conditioning systems. It restates the three classifications of users of refrigerating and air-conditioning systems entitled to priority ratings under the order, and raises the ratings for replacement parts needed by users in the first class from 1-A-a to AA-2X; those in the second class from A-3 to AA-3 and the third class from A-8 to AA-4.

Whenever a rating of AA-2X is applied to delivery to users in the first class, the service agency applying the rating must notify the War Production Board promptly by telegram or letter explaining the circumstances requiring the application of such rating, stating the material obtained and naming the supplier.

Comfort cooling systems, as defined in the order, of any size operated for the purpose of lowering the temperature or humidity of air in any building, room or other enclosure are not provided for by any ratings. The order lists the types of use included within the definition of "Comfort Cooling Systems." It excluded from the definition, however, such parts of comfort cooling systems as may be

required for the circulation of air or for raising the temperature during cold weather to a degree which is comfortable or tolerable for persons.

Emergency service agencies cannot deliver any metallic replacement parts unless the owner of the system turns in the old part immediately upon installation of the new in order that such old parts may be repaired, re-conditioned or disposed of to a scrap dealer. None of the provisions of the amended order applies to domestic mechanical or ice refrigerators.

The term "emergency service agency" as defined in the amended order covers any person engaged in performing repair services and holding an "emergency service agency certificate" issued by the War Production Board.

The original Order P-126 was published in the May, 1942 issue of REFRIGERATION SERVICE ENGINEER. The full text of the Amended Order follows:

PREFERENCE Rating Order P-126, as amended, and all serial numbered counterparts thereof heretofore issued, are hereby amended to read as follows:

For the purpose of facilitating the acquisition of material for the emergency repair servicing of industrial and commercial refrigerating or air conditioning systems, preference ratings are hereby assigned to deliveries of such material upon the terms and conditions hereinafter set forth:

Preference Rating Order P-126—(a)
Definitions. For the purpose of this order:

(1) "System" means any refrigerating or air conditioning system consisting of an assembly or combination of machinery, equipment, or other apparatus designed primarily to lower the temperature of, or remove water vapor from gaseous, liquid or solid matter, directly or indirectly, by mechanical, chemical or physical means. The term shall not include a domestic mechanical refrigerator or a domestic ice refrigerator as defined in paragraphs (a) (9) and (a) (10) of this order.

(2) "Parts" means all parts, materials, insulated enclosures, implements and devices designed or suitable for incorporation in a system or for use therewith in causing it to perform its functions.

(3) "Emergency repair service" means the repair of any installed system when, subsequent to its installation and operation a breakdown occurs therein, or is immediately threatened. The term does not include replacement of the high (pressure) side or condensing unit (with or without motor or condenser) except in sealed unit types, the low (pressure) side, or the insulated enclosure; but does include necessary replacement of any component part of the high side, low side, or insulated enclosure, if such part cannot be repaired and if the part installed is not of greater size or capacity than the part replaced.

(4) "Emergency service agency" means any individual, partnership, association, business trust, corporation, or other organized group of persons, whether incorporated or not, regularly engaged in performing repair service to systems, and holding an unrevoked counterpart of this order with a serial number issued to such agency by the War Production Board in accordance with paragraph (c) of this order. The term also includes any such agency owning or leasing an industrial or commercial system or systems and performing its own repair service. The counterpart of this order issued to such an agency is referred to herein as the "emergency service agency's certificate."

(5) "Inventory" means the entire stock of new, used or reconditioned parts held by an "emergency service agency."

(6) "Material" means any commodity, equipment, accessory, part, assembly or product to be used in connection with emergency repair service, or placed in authorized inventory, except chlorinated hydrocarbon refrigerants.

(7) "Delivery of material" includes the furnishing of parts or facilities for the repair of systems as well as the delivery of any material.

(8) "Scrap dealer" means any person regularly engaged in the business of buying metal scrap or junk for resale.

(9) "Domestic mechanical refrigerator" means any refrigerator for household use which operates either by compression or absorption and which has a net capacity of 16 cubic feet or less (National Electric Manufacturing Association rating), but does not include any low temperature mechanical refrigerator designed for the storage of frozen foods or for the quick freezing of food where the low temperature compartment customarily operates at a temperature of not higher than 15 degrees above zero Fahrenheit and contains 75% or more

of the total refrigerating space in the refrigerator.

(10) "Domestic ice refrigerator" means any non-mechanical ice chest or ice box for home use.

(11) "Comfort cooling system" means any system, of any size, operated or installed for the purpose of lowering the temperature and/or humidity of air in any building, room or other enclosure used as, or located in any of the following:

- Amusement parks.
- Animal hospitals.
- Auditoriums.
- Ballrooms, dancing studios, and dance halls.
- Banks and loan associations.
- Bars, cocktail lounges, and beer parlors.
- Bowling alleys.
- Concert halls.
- Funeral parlors.
- Golf clubs, country clubs, and athletic clubs.
- Hotels and apartment houses.
- Moving picture houses.
- Night clubs.
- Office buildings and offices, public or private.
- Railway, streetcar and bus stations and terminals.
- Residential buildings and dwellings of all kinds.
- Restaurants, cafeterias, and other places selling meals, food or beverages.
- Schools.
- Service establishments, such as laundries, cleaners and dyers, tailor shops, barber shops, "beauty" parlors, automobile sales and service shops, and repair shops of all kinds.

Skating rinks.

Stores, selling any kind of products, material or merchandise, at retail or wholesale (excluding manufacturing establishments).

Theaters.

The term "comfort cooling system" shall not include (i) any such system used to air condition a building, room or other enclosure used chiefly for purposes not listed above, or (ii) any system designed, necessary and used, in substantial part for the refrigeration and storage or processing of food, ice (except in skating rinks), or other materials or products requiring refrigeration, temperature control or freedom from dust or other impurities or (iii) such part of a system as may be necessary and used for the circulation of air, or necessary and used for raising the temperature of air during cold weather to a degree which is comfortable or tolerable for persons (comfort heating).

(b)—*Assignment of preference ratings.* Subject to the terms of this order, the following preference ratings are hereby assigned to be applied by any "emergency

service agency," except that no such rating shall be applied in any case to secure delivery of parts for the repair or maintenance of any comfort cooling system:

CLASS I

(1) AA-2X to deliveries of material for emergency repair service for any system upon which depends:

(i) The processing transportation or storage of food and dairy products for the Army or Navy of the United States, the United States Maritime Commission, or the War Shipping Administration;

(ii) The continued operations of a cold storage warehouse, commercial ice manufacturing plant, or car icing plant;

(iii) The continued operations of a meat-packing house under the inspection of the United States Government;

(iv) The continued operations of the "dry blast" in a blast furnace;

(v) The continued operations of a plant or factory engaged in industrial or commercial processing of materials or products for delivery under "defense orders" as defined in Priorities Regulation No. 1.

Whenever a rating of AA-2X has been applied to any such delivery, the person applying such rating shall notify the War Production Board promptly by telegram or letter explaining the circumstances requiring the application of such rating, stating the material obtained thereunder, and naming the supplier.

CLASS II

(2) AA-3 to deliveries of material for emergency repair service for any system upon which depends:

(i) The continued operations of a plant engaged in industrial or commercial processing of food or food products (not including the processing of dairy products on a farm).

(ii) The preservation of blood plasma, pharmaceuticals, or foods in a hospital; and the transportation or storage of food and dairy products, except in establishments selling or serving food at retail, and except for domestic storage.

CLASS III

(3) AA-4 to deliveries of material:

(i) Required to maintain an inventory, provided that such rating shall not be applied to increase any inventory beyond the restrictions contained in paragraph (e) of this order.

(ii) For emergency repair service to any system used for food preservation (and excluding comfort cooling systems) in an establishment where food is sold or served at retail.

(iii) For emergency repair service to all other systems not included in paragraphs (1) or (2) above, including farm milk coolers; but excluding domestic mechanical refrigerators and domestic ice refrigerators, and comfort cooling systems.

The Director General for Operations may also, upon written or telegraphic request, assign preference ratings higher than those provided by this order to deliveries of material for emergency repair service for, or to make reasonable advance provision to avert breakdown or suspension of operation of, a system included in any Class listed above. The request for such rating shall describe the specific quantities and types of material for which the rating is desired, and the nature of the breakdown which has occurred or immediately threatened, or the reasons why advance provision is necessary to avert the breakdown or suspension of operation of the system.

(c)—*Application of preference ratings.*

(1) Any person who is customarily engaged in rendering repair service for systems may apply for an "emergency service agency's certificate." Such application shall be made on Form PD-399 if such applicant is engaged in the business of rendering repair service for others, and on Form PD-471 if the applicant is the owner or lessee of a commercial or industrial system or systems and is performing his own repair service. No person shall apply the preference ratings assigned by this order except a person to whom such an "emergency service agency's certificate" has been issued.

(2) The "emergency service agency" applying such ratings shall endorse on the original and all copies of each purchase order or contract for materials placed by it, which are to be rated pursuant to this order, a certification in the following form (with appropriate insertions in the blank spaces indicated) manually, or as provided in Priorities Regulation No. 7, signed by such agency or its agent or official duly authorized for such purpose:

Preference Rating A- is applied hereto under and in accordance with the provisions of Preference Rating Order No. P-126, as amended, Serial No. , with the terms of which order the undersigned is familiar, and which has not been revoked as to the undersigned.

.....
(Name of "emergency service
agency" applying rating)

By
(Duly authorized official)

No person shall make delivery under any such purchase order or contract who has reason to believe that the person requesting delivery has furnished a false certification;

and no person shall falsely furnish the certification required above. Such certification shall constitute a representation to the seller, and to the Director General for Operations, War Production Board, by the "emergency service agency" placing such order, and by his agent or official whose name is affixed, that the statements in such certification are true. Any person with whom a purchase order bearing such a certification is placed may rely upon such certification, and shall not be responsible for any action taken by him in reliance upon any inaccurate or untrue statements therein, unless he has reason to believe that such statements are inaccurate or untrue.

The furnishing of such certification shall also serve in place of, and shall obviate the necessity of furnishing, the certification required for the delivery of repair parts under paragraph (c) (2) of Limitation Order L-123 as amended, or for such repair parts under any other limitation order of the War Production Board.

(3) No person supplying materials to an "emergency service agency" shall make delivery of any material by reason of any preference rating applied under this order unless or until he has seen the "emergency service agency's certificate" of the agency applying such rating, or an authenticated copy thereof. Such an authenticated copy may be a photostat or other copy of such certificate to which has been affixed the affidavit of the agency or its duly authorized agent or official to the effect that such copy is a copy of the certificate which has been issued to the agency named therein, and that such certificate has not been revoked.

(4) The "emergency service agency's certificate" issued to any person hereunder may be revoked as to such person, if at any time he (or it) applies any rating assigned by this order for the purpose of securing material otherwise than in accordance with the terms of this order, or wilfully violates any of the provisions of this order, or any other order, rule or regulation of the War Production Board. Upon and after any such revocation, the person affected thereby shall not thereafter apply any preference rating pursuant to this order, but any rating applied by him prior to such revocation shall not be affected by such revocation, unless specifically revoked.

(5) Any rating assigned hereunder may be extended in accordance with Priorities Regulation No. 3, as amended from time to time.

(d)—*Restrictions on application of preference ratings.* No "emergency service agency" shall apply any preference rating provided for by this order for any of the purposes, or in any of the cases, following:

(1) To increase its inventory so as to

exceed the restrictions on inventories contained in paragraph (e);

(2) To render any repair service which is not "emergency repair service," as defined in this order;

(3) To obtain delivery of any part made of metal unless the owner of the system agrees to deliver the old part to the "emergency service agency" immediately upon installation of the new or reconditioned part, and the "emergency service agency" obtains such old part accordingly, and all such old parts obtained by an "emergency service agency" during any calendar quarter are either repaired and replaced in its inventory, or returned to its supplier of new parts, or disposed of to a scrap dealer during or within 90 days after the end of such quarter: *Provided, however,* That block tin pipe so obtained shall in any event be returned to a fabricator of such pipe;

(4) To obtain any parts for delivery with any "new" system, or for expansion of existing facilities, or for non-emergency replacement, including (among others) the following parts:

(i) Automatic controls, either domestic or commercial;

(ii) Copper tubing or fittings;

(iii) Copper tubing or pipe for the manufacture or "winding" of "low sides," or pipe for the manufacture of coils;

(iv) Suction or liquid line valves whether operated manually, thermostatically or by pressure;

(v) Water control valves whether operated electrically or by pressure;

(vi) Expansion valves of any description;

(vii) Complete "low sides" of any classification, including water coolers, carbonated water coolers, and malt beverage coolers;

(viii) Copper tubing for the fabrication of water or beverage cooling "low sides";

(ix) Complete "high sides" with or without controls and with or without a motor;

(x) Component parts of "high sides" for assembly into a complete unit;

(xi) Electric motors; or

(xii) "Flash-type" baffles for the modernization of existing installations.

(5) To obtain material which can be secured when required without such ratings;

(6) To obtain deliveries in greater quantities or on dates earlier than reasonably necessary for emergency repair service or authorized inventory requirements;

(7) To obtain any babbitt metal containing more than 12% by weight of tin;

(8) To obtain any solder containing more than 21% by weight of tin, except when permitted under the terms of Preference Order M-43, as amended.

(e) — *Restrictions on inventories of "emergency service agencies."* Unless specifically authorized by the Director General for Operations, no "emergency service agency" shall apply any preference rating under this order to any purchase order for the delivery of any parts for inventory if the inventory of parts held by such "emergency service agency" is, or would by reason of such delivery become, in excess of the inventory of such parts held by such agency on December 31, 1941 (or if no inventory was taken on that date, then at the end of its fiscal year ending in 1941). An "emergency service agency" which maintained no inventory of parts for repair service in 1941 shall not apply any preference rating hereunder to obtain any parts for inventory: *Provided,* That any such agency who considers that its compliance with this restriction would prevent the rendering of necessary emergency repair service in its community may apply for specific authorization to permit it to apply preference ratings hereunder to obtain parts for inventory.

(f) — *Miscellaneous provisions*—(1) *Aplicability of priorities regulations.* This order and all transactions affected thereby are subject to the provisions of all priorities regulations of the War Production Board, as issued or amended from time to time, except to the extent that any provision of this order may be inconsistent therewith, in which case the provision of this order shall govern.

(2) *Records.* Each "emergency service agency" shall keep and preserve for not less than two years endorsed copies of all purchase orders or contracts placed by it to which it applies any preference rating assigned under this order, and also a separate record of each service job in the performance of which it uses materials or equipment rated under this order, including the names and addresses of all its customers with a list of parts and material used on each job. Each supplier shall keep and preserve for a period of at least two years endorsed copies of all purchase orders or contracts received by him and rated under this order, whether accepted or rejected.

All persons affected by this order shall keep and preserve for not less than two years accurate and complete records of inventories of parts for systems.

All records required to be kept by this order and the priorities regulations shall upon request be submitted to audit and inspection by duly authorized representative of the War Production Board.

(3) *Reports.* All persons affected by this order shall execute and file with the War Production Board such reports and questionnaires as said Board shall from time to time request.

(4) *Violations.* Any person who wilfully violates any provision of this order, or who, in connection with this order, wilfully conceals a material fact or furnishes false information to any department or agency of the United States is guilty of a crime, and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of, or from processing or using, materials under priority control, and may be deprived of priorities assistance.

(5) *Appeals.* Any appeal from the provisions of this order shall be made by filing a letter in triplicate, referring to the particular provision appealed from and stating fully the grounds of the appeal.

(6) *Communications.* All reports to be filed, appeals and other communications concerning this order should be addressed to: War Production Board, General Industrial Equipment Division, Washington, D. C., Ref.: P-126.

(7) *Revocation or amendment.* This order, and any or all serial numbered counterparts thereof, may be revoked or amended at any time and from time to time by order of the Director General for Operations. Deliveries rated prior to any such revocation, by a person whose "emergency service agency's certificate" is revoked thereby, shall be completed in accordance with this order unless the applied rating is specifically revoked with respect thereto, but the person whose certificate is thereby revoked shall not thereafter apply any additional ratings hereunder.

Comments on Revised Order

Chicago leaders in refrigeration had the following comments on the revised order:

HARRY ALTER, President, The Harry Alter Company: "Hurrah for the newly amended order No. P-126! It will be of enormous help to every commercial refrigeration service engineer and to his supplier as well. My hat is off to the officers of RSES and the other trade associations, who have done so much to help liberalize this order. Now that the industry has such high preference ratings for repair parts on commercial systems, and now that certificates are to be awarded to all legitimate repair companies, let me urge upon certificate holders the utmost importance of care and integrity in the use of these ratings. Let's keep this order clean, avoid misuse and chiseling. Remember that if abused it can be revoked, so it's up to all of us to scrupulously comply with all its provisions. Yes, it's a great improvement and convinc-

ing evidence of the importance of refrigeration in our national economy."

ALEX HOLCOMBE, JR., President, National Refrigeration Supply Jobbers Association: "In the revised P-126 the War Production Board and particularly Sterling Smith, Chief of the Refrigeration and Air Conditioning Section of the General Industrial Equipment Branch, have furnished us with an almost completely rewritten order carrying high ratings. In fact, the ratings are high enough to put commercial refrigeration repairs on a competitive basis with Army and Navy construction involving new refrigeration equipment. Now, anyone having an inventory of material as of December 31, 1941, may receive PD-399 or PD-471 forms by simply requesting them from the Refrigeration and Air Conditioning Section of the General Industrial Equipment Branch. These forms may not be reproduced by anyone. There is, therefore, no excuse for any service company or individual doing commercial service not having a license in the near future."

MEYER AXELROD, President Chicago Chapter, RSES: "The revised P-126 looks very good indeed to me, and a week of work under its better provisions shows me in a convincing manner that service men are bound to benefit tremendously. All of us must obey the order with care, keeping in mind that the War Production Board has put us on our honor, in a lot of ways, not to make interpretations which are so liberal as to be out of step with the spirit of the order. The replacement parts which will be most favorably affected, it seems to me, are copper tubing, BX, Fusetrans, and motors of one horsepower and up. The benefit may become apparent on other parts, as the war continues and shortages grow."

HERMAN GOLDBERG, Herman Goldberg Co.: "The more favorable ratings allowed under the revised P-126 will do much to prevent, I hope, the development of a critical condition on repair and maintenance during the warm weather of the coming summer. If the service engineers could find something which would give them as much help on the manpower shortage as this new order will give them on replacement parts, I am sure we should have little fear. The revision of this order represents a fine piece of work on the part of members of the War Production Board and of the various branches of the refrigeration industry, which have cooperated closely."

Electrical Work and Motors

(CONTINUED FROM JANUARY ISSUE)

STARTING in the December issue, the following is the third in a series of articles on the fundamentals of electric motors. Due to the shortage of man-power many service concerns have found it necessary to train men over draft age and women, and these newer employees will find the information in these articles on electrical work and motors of special interest and value. Another reason for publication of this information at this time is the shortage of motors as well as copper and other repair materials, making it necessary now more than ever before to maintain motors with scrupulous care so as to prolong their time of usefulness as long as possible. While the information is not new, the subject, we believe, is of sufficient importance to claim interested attention.—Editor.

Effect of Counter Voltage

The effect of this counter voltage is to cause the current to lag behind the voltage in building up to its maximum value and, as

behind the voltage more in the high inductance coil than it would in the comparatively low inductance coil. If the switch in Fig. 18-a is opened, the current which has required some time to build up will be broken or decreased to a zero value in the time required to open the switch, which is almost instantaneously.

Thus, the field due to this current, decreases from a maximum value to a zero value in a very short space of time, and its rapid reduction in field strength causes a high voltage to be generated in the coil which tends to make the current continue flowing. That is the effect of any inductance; to retard the building up of the current due to an applied voltage and to retard the cutting down of the current due to the applied voltage being discontinued.

A diagram of an automobile ignition system is shown in Fig. 14 which gives a practical application of the principles referred to above. A battery is connected at one end to a ground connection some place on the car, and the other end is connected to a coil consisting of comparatively few turns of fairly heavy wire which pass through this coil to contact points located in the distributor head and then complete the circuit

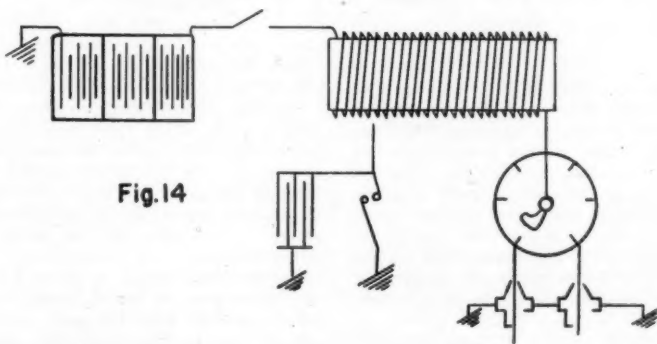


Fig. 14

will be shown later, if there are two coils in parallel, one of which has a higher inductance than the other, the current would lag

through a ground. A small electrical condenser is shown in parallel with the breaker points.

A secondary coil is connected in series with the primary coil, consisting of a very large number of turns of fine wire; and as the breaker points are closed a current is built up in primary coil and of course a voltage is induced in the secondary coil; but this voltage is not enough to cause ignition.

However, when the breaker points open and this current which has been built up in the primary coil is broken instantaneously,

coil shown at the top which is in series with a brush which contacts a commutator on the rotating part of the motor. This rotating part of the motor includes a continuous coil connected from one commutator segment through the coil to the other commutator segment, the two parts of the commutator being insulated from each other.

From the other side of the commutator a second brush carries the current through a

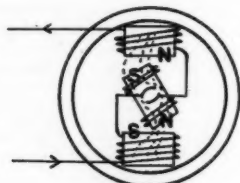
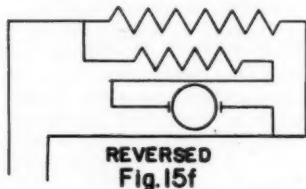
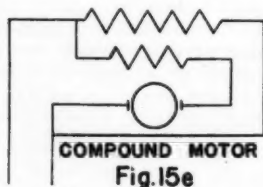
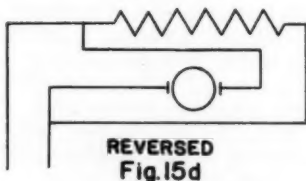
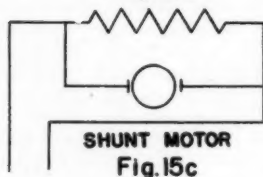
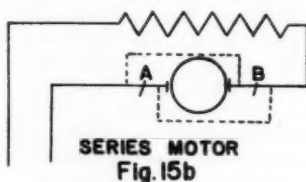


Fig. 15a



the voltage generated in the secondary coil in series with the primary is very high due to the rapid change in magnetic field; and this voltage is high enough to cause a spark to jump across an appreciable gap. The coil is connected to the various spark plugs by the distributor so that as the breaker points open a high voltage is generated in the secondary coil and is distributed through the distributor to the various spark plugs causing a spark to ignite the gas in the cylinders.

Simple Type Direct Current Motor

In Fig. 15-a is shown a simple type of direct current motor. In this motor the power line is connected to one end of a field

second field coil and back to the other side of the line. In the diagram shown the current flow causes the upper pole to become a north pole magnet while the lower field pole is a south pole. With the current passing through the armature coil in the direction shown, the upper part of the armature becomes a south pole and the lower part a north pole.

The magnetic circuit is shown by arrows and these lines of force, acting as rubber bands, tend to draw the south pole of the armature under the north field pole while the north pole of the armature is drawn over the south field pole. As this position is reached, the brushes are reversed on the commutator segments and the flow of current

is reversed through the armature causing what was a south pole to become a north pole and what was a north pole to become a south pole; and in this position with two south poles directly together and two north poles directly together, we get repulsion; and the armature continues to turn in a counter-clockwise direction, the direction of current through the armature reversing itself for each half-turn of the armature.

A diagrammatic sketch of a series motor is shown in Fig. 15-b. The field coil is shown as being in series with the armature. Dotted lines in Fig. 15-b show the method of reversing the direction of this motor.

A shunt motor in which the field coil is in shunt or parallel with the armature is shown in Fig. 15-c. In this case, the field coil usually consists of a large number of turns of comparatively fine wire while in the series motor the field coil is heavier wire as it must carry all the current which passes through the armature. Fig. 15-d shows the method of reversing this shunt wound motor.

ture. The method of reversing this compound motor is shown in Fig. 15-f.

All three of these types of motors (that is, the series, the shunt and the compound motors) may also be used with alternating current except that where alternating current is to be used it is absolutely essential that all iron cores be made of laminated strips or wires of soft iron; otherwise small voltages would be induced in the iron cores due to the continuous reversal of the current flow and this will set up heavy eddy currents in the iron cores which will cause heating in the cores and power loss to the motor. In any of these types of motors the brushes are in continuous use while the motor is in operation.

Three Phase Generator

Fig. 16-a shows on the left a three-phase generator connected to a three-phase motor on the right. The generator consists of three coils with leads connected as shown to a

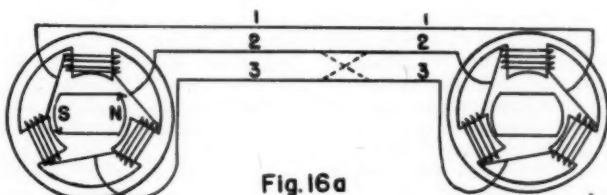


Fig. 16a

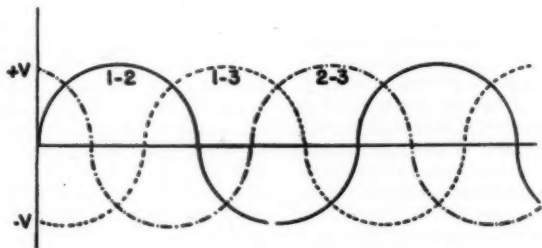


Fig. 16b

A compound wound motor is shown in Fig. 15-e. This consists of two fields, one being a shunt field and having a large number of turns of comparatively fine wire which is in shunt with the armature and series winding. The series field consists of a fewer number of turns of heavier wire which carries the full current which passes through the arma-

rotor which consists of a north and south pole magnet rotating by the cores and windings as indicated. As the axis of the bar magnet is perpendicular to the axis of the coil connected to wires 1 and 2, the voltage in the coil is zero; but as the north pole approaches and passes the coil, the voltage increases from zero value to a maximum at the

time the north pole is passing; and is reduced to zero again when the magnet has made one-half revolution.

As the south pole approaches the coil and passes it, the voltage increases to a maximum in the opposite direction and this is reduced to a zero value again. The line marked 1-2 in Fig. 16-b shows the voltage changing from zero to maximum positive value down to zero and to a maximum negative value and back to zero again as one complete cycle, and the cycles are continuous, of course, as the bar magnet continues to rotate by the coils.

By the time the voltage has changed from zero to positive maximum, to a negative maximum and back to zero again, the bar magnet has turned around one complete turn of 360° so that we can lay out the voltage curves according to the number of degrees of rotation of the bar magnet. Thus, in starting we have zero degrees. We have a maximum positive voltage at 90° or one-quarter turn; we have a zero value at 180° or one-half turn; and a maximum negative value at 270° or three-fourths of a turn; and are back to zero again at 360° or a full turn.

The coil connected to leads 1-3 has a voltage which alternates in this coil induced by the rotation of the bar magnet in the same manner as in the coil connected to leads 1-2. However, the voltage increases and decreases one-third of a turn later than it does in the coil connected to leads 1-2, so that the dotted line curve numbered 1-3 shows the way in which the voltage builds up and decreases on cross lines 1-2.

Another one-third of a turn later the voltage builds up and decreases through the coil connected to leads 2-3, so that the voltage is built up in lines 1-3 one-third of a turn or 120° after 1-2, and the voltage is built up in 2-3, two-thirds of a turn after 1-2, or 240° . This is what we refer to as a three-phase line, each pair of wires giving us the same voltage but the maximum voltage occurring at different times.

If we connected this as shown to the motor coils on the right, the upper coil is shown connected to lines 1-2 so that one instant it will be a maximum north pole; one-third of a turn later the coil on the right is connected to leads 1-3, which comes up to a maximum value next; and one-third of a turn later the coil on the left becomes a maximum north pole and we have the effect of a north pole rotating about a circle at the same rate that the bar magnet in the generator is rotating. A south pole follows the north pole at 180° .

Squirrel Cage Rotor

Any metal disc inserted in this rotating field will become the rotor of a motor and will cause a torque tending to follow the rotating field. The usual type rotor used consists of a ring of copper at each end of the rotor, the two rings being connected by a number of bars and due to its appearance is referred to as the squirrel cage rotor.

The magnetic field being increased and decreased in each coil induces a low voltage in the rotor bars but, due to low resistance, a high current in the various bars of the squirrel cage. This current in the bars of the squirrel cage sets up a magnetic field and the magnetic field of the rotor is dragged around by the rotating field and causes the rotor to turn.

This type of motor uses no brushes whatever. The only mechanical contact between the motor frame and the rotating part is through the motor bearings. If the leads are reversed as shown by the dotted lines, it will be found that the upper coil becomes a north pole first; one-third of a turn later the left coil becomes a maximum north pole, and another one-third of a turn later the right coil becomes a maximum north pole; so that reversing these or any two wires causes the rotating field to be reversed and the motor will then turn in the opposite direction.

Synchronous Motors

A two-pole synchronous motor is shown in Fig. 17-a. In this case the upper pole is a north pole while the lower pole is a south pole and these poles are reversed depending on the rate at which the line current or line voltage is reversed. In a 60-cycle system this voltage is reversed at such a rate as to cause the upper pole to be a north pole sixty times and a south pole sixty times in each second. In one minute, then, the upper coil will be a north pole and a south pole 3600 times; and with a permanent magnet as a rotor, the south pole has to keep up with the oscillations of the north pole.

In the position shown the south pole of the rotor is coming up under the north pole field. As it reaches this point, the north pole field decreases and the south pole continues to rotate and as the bottom pole becomes a north pole, the south pole has made one-half revolution; and as the upper part again becomes a north pole, the south pole continues to rotate and completes one revolution. Thus, the rotor makes one revolution every time the upper pole is a north pole, which occurs 3600

times each minute; so that the rate of rotation for this type of motor would be 3600 r.p.m. on a 60-cycle frequency line.

A 4-pole synchronous motor is shown in Fig. 17-b in which the upper and lower poles are north poles at one instant while the right and left poles are south. In this case as the direction of current changes, the north pole passes from the upper coil to the left coil and as the current reverses back to the original direction, the upper and lower coils are both north and the rotor continues to rotate in a counter-clockwise direction, the south poles continue to follow the north poles around.

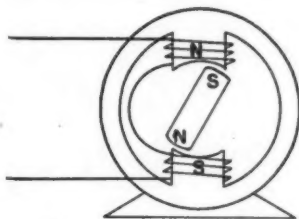


Fig. 17a

This motor will then thus make one-quarter revolution for one reversal of the motor current, or will make one-half revolution for one complete cycle of the applied voltage. Thus, while one pole changes from north to south and back again 3600 times per minute, the rotor turns only half that number of times, or 1800 r.p.m. The speed of a synchronous motor may be found then by applying the formula:

$$\text{R.P.M.} = \frac{\text{Frequency} \times 60}{N/2}$$

where N is the number of poles in the motor. Thus, suppose we had a six-pole 60-cycle motor. The synchronous speed would be:

$$\text{R.P.M.} = \frac{60 \times 60}{6/2} = 1200 \text{ R.P.M.}$$

Or suppose we had a four-pole 25-cycle motor. The speed would be:

$$\text{R.P.M.} = \frac{25 \times 60}{4/2} = 750$$

Synchronous motors are not generally used for small refrigeration plants, but are used to a great extent in large ice making plants. The synchronous motor is an absolutely constant speed motor depending on the fre-

quency of the system. It is electrically geared in to the generator. Our electrical clocks consist of synchronous motors which depend on the speed of the generators in the power generating stations, and since the generating stations make it a point to keep their frequency absolutely constant, the speed of the motor is constant and it gives absolutely dependable time regulation.

Split Phase Type

A split-phase type of motor is shown in Fig. 18-a. This type is used on washing machines and a number of other applications

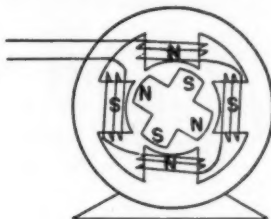


Fig. 17b

where high starting torque is not a requisite and where high starting current is not a decided disadvantage. In this motor the upper and lower poles are the running poles; or the windings are referred to as the running windings. The windings on the left and right coils are referred to as starting windings and are connected in only for starting purposes; but as the motor gets up to speed, these starting windings are cut out.

A voltage curve having alternating current is shown in Fig. 18-b. A-1 shows a current curve which lags the voltage curve due to the inductance in the coil. A-2 is a current curve which lags the voltage a considerably greater amount due to the fact that the coil through which this current passes has considerably higher inductance than the other coil.

Thus, we have a two-phase current resulting from a single-phase voltage; one current phase is used in the starting windings and the other current phase is used in the running windings. This produces the rotating field effect that we found in three-phase motors for purposes of starting the motor; but after the motor gets up to speed, the starting windings are cut out and due to the fact that the motor is rotating and that current through the bars of the squirrel cage

rotor lags the voltage, the combination of rotating speed and lag of current behind voltage causes the field of the rotating part to be offset from the field of the stationary coils; and thus the motor keeps on rotating.

If the leads to the starting windings were reversed, the motor would start in the opposite direction. If the starting windings were not connected in at all and the current

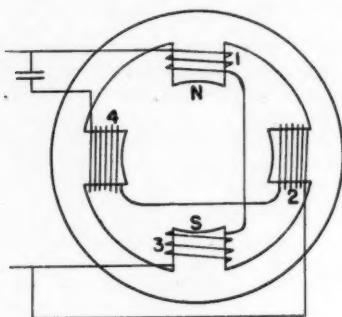


Fig. 18a

was applied to the running windings, the motor might be put in rotation by spinning the shaft and the motor would run equally well in either direction depending on which direction it was started in.

Condenser Type Motor

This type of motor is not used often in refrigeration work except in sealed units; but a similar type of motor which in reality is a split-phase motor (but in which the phase is split by the use of an electrical condenser) is used in refrigeration work considerably. This type of motor is referred to as the capacitor or condenser type motor.

Generally, the condenser is used only in starting and in some instances it is found advisable to use a transformer to step up the voltage of the condenser to possibly three to five times the line voltage. This gives a greater current through the condenser and thereby increases the starting power of the motor. The same result can be obtained, of course, by increasing the capacity of the condenser. In either case the condenser is usually cut out and the starting windings are not used when a motor gets up to speed. A centrifugal weight assembly cuts out the starting windings. The motor as shown is a two-pole motor; that is, it uses two poles when up to speed. Normally we use four poles to obtain a suitable motor speed.

Repulsion Induction Type

The repulsion induction type of motor is shown in Fig. 19. This type has been used more than any other in the past in connection with refrigeration apparatus. As shown, it consists essentially of two field coils which are connected in series and thus connected directly to the line. The oscillating field in either coil induces voltages in coils in the

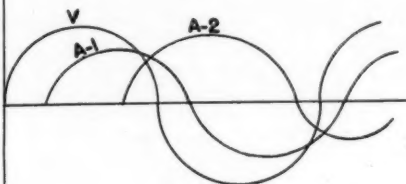


Fig. 18b

rotor which are connected by leads to the various commutator segments.

If the ends of these coils were connected together, a current would be set up in the coils under these field coils and due to current lag the field of the armature would lag the field of the field coils and repulsion would prevail between the armature and field coils. This would not cause the motor to start, however, as this repulsion would have no tendency to supply any torque or twisting effort.

(Continued on page 38)

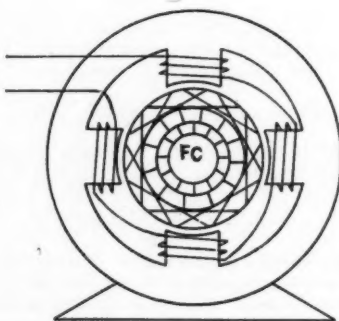


Fig. 19

COMMERCIAL

INCREASE BUSINESS BY
DOING A MORE EFFEC-
TIVE JOB OF SELLING

Selling

Frozen Foods Will Help Supply Food Needs of Nation

By Jane Carver

A GLIMPSE into the immediate future of the household refrigeration industry shows possibilities for a substantial increase in the use of frozen foods. With canned foods rationed, these frozen foods although rationed also, will move forward to fill the gaps of scarcity in the ranks of canned meats, fruits and vegetables.

To meet wartime needs, production of canned fruits and vegetables have been greatly stepped up. Figures for the 1942 production show approximately 50 per cent increase over 1941, and 1943, barring economic difficulties such as prices and costs, promises to show a proportionate increase.

Frozen Foods Known

Frozen foods have, after many years, become known and appreciated by thousands of cooks and housewives. And with the coming of war, with its problems of food, the industry has accepted the responsibilities and opportunities of helping to supply the nation's food needs, not only civilian but also for the armed forces in this country and abroad.

Savers of Space

Frozen foods are savers of storage and shipping space, two items of special importance in wartime. Their use of metals for packaging is practically nil, cardboard and waxed paper being used almost exclusively, and only half as many railroad cars are needed for hauling them to market. Waste is utilized at the point of production. Pods of peas and lima beans are stacked at the field and make excellent cow feed. Left behind at the meat packing plant are bones, hides and surplus fats. Fish heads, tails and fins are turned into fertilizer at the seaside packing plant.

Frozen food staples of such items as peas, beans, corn, strawberries and cherries will continue to be the most popular sellers, but enthusiasts and the more venturesome among the packers are constantly putting forth newer products,—or rather old products in new forms. Boston baked beans can now be had frozen, also corned beef hash. Other meat dishes include lamb stew, beef stew, spaghetti in sauce of tomato, chicken ala king, creamed chicken, cream soups, and a new salad of mixed vegetables.



One of the many frozen food cabinets now in constant use in retail food stores throughout the country.



Quick frozen fish packaged ready for display in retail food store.



Selected trout fillets packaged and ready for retail market.

Somewhat newer and more for the epicurean are frozen melon, roast beef and other cooked meats, cooked fish, and rare tropical fruits. Cake batter, it is said, can be quick frozen and held and then thawed and baked into a delicious cake. All these and other food products can and are being quick frozen, and who knows but what the household refrigerator of the future may hold all these frozen foods and maybe some others.

Not only in variety, but in volume, the future of the frozen foods business looks very promising. Right now the Government is the one big customer, for lend-lease and the armed forces. Staple and essential vegetables, fruits and meats are required to fill this need. But the industry offers plenty of variety in this time of growing shortage of foods. Sixty different kinds of frozen foods are packed by 140 frozen food packers and sold under more than 70 different brand names in 30,000 retail stores in every state in the Union. Fourteen years ago ten stores in Springfield, Mass., started selling a line of frozen fish. Now there are two dozen

varieties of frozen fish; all the more common fruits and vegetables, and an almost complete line of frozen pork, beef and lamb cuts.

Now They're Ready Cooked

Over the endless production belt of new ideas and new ways comes the newest wrinkle, ready cooked frozen foods. These probably will have a special appeal to the small apartment dweller, the employed women, and those efficient housewives who like to get their cooking done in the minimum of time. These foods are harvested, cooked and frozen, using a minimum lapse of time from the field or orchard to the finished frozen package.

But whether precooked or not, frozen foods now make it easy for the cook to prepare and serve a meal, sumptuous or simple, in the smallest possible space of time and in quality that cannot be surpassed by foods, either fresh or preserved in any other way than the most natural one of freezing.

For garden and orchard freshness are

the rule with frozen foods, and they might well be called fresher than fresh, because they are frozen where they are harvested. Fish are taken direct from trawlers at the seaside, immediately cleaned, filleted and frozen. Meats come to the freezer as soon as the animal heat has been cooled out. Fruits and vegetables are rushed from the orchard and field, quickly cleaned and processed, and frozen in sanitary and convenient packages.

From the packing plant refrigerator cars carry the packages to central refrigerated warehouses. From the warehouse, refrigerator cars and refrigerated trucks distribute them to dealers. In the food stores are refrigerated cases where the packages continue to be held in a frozen state. And in home kitchens, those not intended for the next meal may be held in the family refrigerator and thus kept for several hours, even days, in their original frozen state.

High Quality Kept

These frozen foods going to the consumer provide the apex in quality. Freezing does not improve the quality of any food. So, in order to maintain a high standard, the frozen food packer selects not only the best, but also the variety best suited for freezing. It may be news to some people, but not all varieties make good frozen food products. Take strawberries, for instance. Some of the most luscious variety raw lose much of their goodness when frozen. Peas, the small varieties that can so well, are not so good when frozen.

It took years of research by agricultural experiment stations and frozen food packers to determine which varieties were better and to eliminate those that were not. Much progress has been made along that line, so much, in fact, that packers know not only the best varieties for freezing, but how each variety should be handled. And the customer is assured of getting a high-class product frozen and packed in such a way as to retain and preserve all its best values.

The tin conservation order, limiting the use of tin cans last April, made the pack-

aging of frozen baked beans practical. Tests determined selection of a small California pea bean. Research workers from the staffs of frozen food packers, experiment stations and other food experts were called on and they voted for Boston style. Weeks were utilized for these experiments and tests and it was not until almost June that a trial pack was frozen. Mobile freezing units were installed, the beans baked and seasoned as for ordinary canning, then filled and weighed into boxes, and then frozen.

Nearly 100 batches were frozen and tested for color, flavor, and texture before it was determined that a suitable product had been produced. Two months later distribution was started in selected test stores. The demand was quite up to expectation. And frozen baked beans will soon be added to the other usual items carried by frozen food dealers all over the country. No frozen beans packed in tomato sauce are on the market as yet, but later maybe they will be available for mid-western consumers.

Virtues of Frozen Foods

The virtues of quick frozen foods are already known to thousands of cooks and will be to many thousands more after the war. They save time, can be packed in small space, and furnish assurance of high quality; for fruit is tree-ripened with plenty of natural sugar, and vegetables harvested at their prime are high in vitamins. And they are distance eliminators as well.

For a family may live hundreds of miles from the ocean and be able to serve fresh seafood in the middle west, and have fresh fruits from Oregon and fresh vegetables from California; New Yorkers may have Michigan cherries for Thanksgiving and mid-western corn-on-the-cob for Christmas.

What's all this to the refrigeration service business? Well, it means more frozen food cabinets for food stores; and temporary storage of frozen foods in many home refrigerators never before used for

(Continued on page 38)

Business Interests Advance Plan for Post-War Buying

PLANs for deferred buying of post-war products, including refrigerators and other durable goods, are being advanced by the American Marketing Association and other groups. Preparations for a conference of those interested in such a plan were outlined by Dr. R. J. McFall, chairman of the Marketing Committee of the American Marketing Association. Merchandising bonds or certificates would be issued on which buyers would start paying now and be allowed priority on the delivery of the goods selected when the war is over; the United States Treasury in the meantime holding the money paid in. The bonds or certificates would be sold to established sales organizations of large concerns.

While some business interests have indicated approval of the idea, the head of a large financial organization has expressed opposition, and the Treasury Department is not sold on the idea being practicable. It is the opinion of some that the liquidity of such bonds would make them less popular than regular war bonds.

No Commitment Necessary

However, the American Marketing Association explains that no specific merchandise commitments are necessary. And as to their liquidity, the Association points out that these bonds are intended primarily for that class of people which regularly constitutes the installment buying group and with whom the "first in line" appeal might be effective.

Success of the plan, Mr. McFall believes, would depend upon coordinating the various proposals and establishing one program that will come most nearly to meeting general approval. This will be one aim of the conference, plans for which are now being developed.

Secretary of the Treasury Morgenthau has commented that the proposed plan would be unfair to soldiers, stating that it would give people who are in defense

work priorities in the purchase of refrigerators and other consumer goods which everybody will want after the war, while the men in the service would acquire no such priorities. He also said the idea had no visible merits over the Treasury's present plan of selling war bonds and other Government securities.

Answering this opposition, Dr. McFall pointed out that soldiers are drawn from every class of society and when the war is over will return to families whose other members are the present earners of good incomes and owners of bonds. It is the rank and file of normally low income families which are earning the gross bulk of wages today and buying the greatest bulk of bonds, and the majority of soldiers will return to these families which have the bonds and would have the priorities under the Victory Merchandise Bond Plan, he claimed.

On the point that this plan offers no advantages over the present war bond purchasing, Dr. McFall contended that adoption of a Victory Merchandise Bond Plan eliminates the danger of a "run" on the Treasury to cash bonds for the purchase of merchandise immediately after the war.

Hartford Electric Adopts Plan

In the meantime, while proposal for nation-wide adoption of the program outlined above continued in the discussion stage, the Hartford Electric Light Co., Hartford, Conn., announced that it was inaugurating a plan of its own for customers to place advance orders for electric refrigerators and other appliances. This plan includes present investment of the customer's payments in Government bonds.

Although the plan is sponsored by the Hartford Electric Co., the sales will be made by local electric appliance dealers. Certificates have been printed and it was announced that the plan will be offered by dealers through whom the details will be explained.

OPA Regulations

Applying to Refrigerator Sales and Service Explained and Discussed at Special Meeting

AT TENDED by nearly a hundred interested service men, a meeting was held Monday evening, January 25, at the Allerton Hotel, Chicago, to discuss and explain regulations issued by the Office of Price Administration affecting the refrigeration service and sales business. Representatives of the OPA outlined these regulations briefly and then answered a number of questions.

Opening the meeting, E. I. Dessent, manager of the Dessent Engineering Co., Chicago, explained that he had had some difficulty fully understanding and complying in all respects with these regulations, and after a conference with OPA representatives had decided to call this meeting to give all refrigerator service men in the Chicago territory an opportunity to learn more about the regulations. He then turned the meeting over to George Monjian of the Complete Refrigeration Service of Chicago, who presided.

OPA Representatives Talk

Three representatives of the Chicago Regional Office of the OPA in Chicago, J. Simon, John M. Prendergast and Edward L. Poss, spoke briefly, outlining the regulations pertaining to refrigeration service. The general maximum price regulation, they stated, applies to all industry and business and every business man should be familiar with this regulation and have a copy of it available for reference. From the standpoint of the refrigerator service business Order 165 also is important as it pertains to household and small commercial installations. Industrial refrigeration, units of 25 hp. or over, is covered by Order 136 and manufacturers and assemblers are covered by Order 188.

Maximum Price Regulation No. 165, it was explained, is of special importance to refrigerator service men because it covers household refrigeration. This order was originally effective in July, 1942. (A dis-

cussion of this order was published in the August, 1942, issue of *THE REFRIGERATION SERVICE ENGINEER*, and a circular issued by OPM explaining its application to the refrigerator service field was published in the November issue.)

Briefly, it provides that maximum prices for sales and service are fixed as of March, 1942. If there is no record of a March price for a particular sale or service job, then it was explained, a bid price on that sale or service may be used, or if that is not available, a similar sale or service charge may be on record. These may be used to establish a price. If none of these are available, then an associate service firm may have either an actual sale and bid price, or a comparable sale or job on which a price may be figured. If none of these are available, it was explained that a job could be figured on a basis of material and labor cost as of March, 1942. Discounts, price differentials, and other similar financial transactions must be determined also upon the March basis.

Records Important

Mr. Simon pointed out also that another part of this regulation applies to records. He emphasized that it is very important to keep records, particularly those for March, 1942, for their own reference and for inspection by the OPA. For the purpose of keeping adequate records, it is necessary, he said, to give receipts and sales slips to all customers. For their own guidance, he suggested that a list of all service and sales during March, 1942, be listed, described briefly, with the highest price charged for each sale or service job. One copy of this list should be retained for their own records and the other mailed to the OPA.

Although the representatives of the OPA field office in Chicago are not enforcement officers and are not interested in that phase, being interested only in the trade relations phase, it was emphasized that all refrig-

eration service and sales concerns are now required to maintain the March ceiling price. If anyone finds such prices are unfair or work an undue hardship, he can file application for adjustment. Greatly increased labor costs or an abnormally low price during March will be given consideration. Other things might be given consideration as determined by special cases. Since January 1, new regulations make possible adjustment on an area-wide basis where prices of an essential industry have been found to be too low.

Applications for Relief

Referring again to applications for relief, it was pointed out that all applications naturally cannot be granted, but the office of the OPA is willing to consider them all, and each case will be judged very largely on its individual merits, giving due consideration at all times to the fact that refrigeration has been declared an essential service. The service men were warned, however, that they would have to put up with some inconvenience and some loss because in their business they make use of materials that have been classed as critical from the standpoint of war needs.

Following these talks, a number of questions were asked and answered. Service men were advised to give the OPA specific details in regard to their specific problems, and in such cases they were promised specific answers. In most cases, it was stated, answers could be given by the regional of-

fices, but when they could not, the question would be forwarded to Washington and an answer would be forthcoming from there promptly.

Selling Used Units

A point was brought up in regard to the impossibility of reconditioning refrigerators, either household or commercial, and selling at anything like an adequate price under the price regulations. Answering this question, it was explained that the prices for various repair items have been established by the OPA through advice and consultation with members of the industry, and these prices are based on average costs and expenses. While it is admitted that people are quite willing to pay more than the ceiling prices allow, that would be in clear violation of intent of the regulations. In this case, the interested service man was asked to bring his problem personally to the OPA offices with all pertinent facts and details, and consideration would be given as to whether some arrangement might be made.

Harry Alter, Chicago, in an extemporaneous talk, said considerable value had come to the industry through control of certain prices, but he called the attention of the OPA to the fact that a large degree of tolerance should be allowed because of the difficulty and impossibility in many cases of establishing fixed prices because of the varying cost of service under different conditions.

Detroit Service Men Discuss OPA Regulations

A MEETING of electrical appliance service men in the Detroit metropolitan area was held Friday evening, January 22, at the Fort Shelby Hotel, Detroit. The meeting was held for the purpose of informing all dealers of the scope of Government regulations affecting their business and for establishing a group to present the viewpoint of the appliance field man. Following an outline of the regulations by OPA representatives, general discussion followed in which a number of questions were answered.

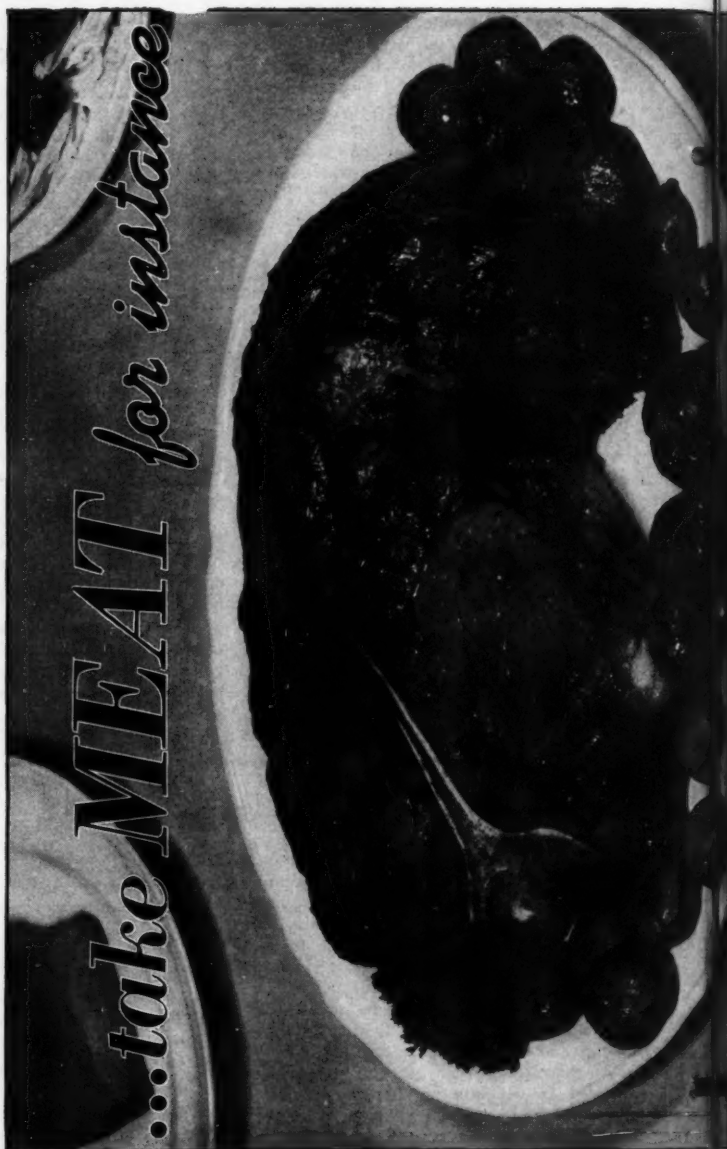
More than seventy appliance service dealers from all parts of the metropolitan area were present at the meeting. Talks were made by Roger Warnshuis, price at-

torney for the Office of Price Administration in the Detroit district, and by Robert Watson, enforcement attorney for that area.

Scope of Regulations

The scope of the various regulations affecting appliance sales and servicing were reviewed by Warnshuis, who interprets the Government's rulings to commercial dealers and to the public. Although these regulations total more than three hundred, he stated, the trend of their implication is emerging as one of general definition from Washington, with the regional headquarters and the district offices setting up terms

It's Time to Tell About Refrigeration's "Hidden Services"



 Mrs. Housewife, as she eyes the diminishing variety of meats in her butcher's

temptingly fresh only because of the



Mrs. Housewife, as she eyes the diminishing variety of meats in her butcher's Display case, has her first introduction to vast service Refrigeration offers to this important part of her daily menu. Yet the Refrigerated Display Case and "Walk-in" box, so familiar to shoppers, is but the final phase of Refrigeration's long list of "Hidden Services."

Long before your wife picks out your favorite "cut" at her market, Refrigeration was on the job. In great packing plants, men, warmly dressed for sub-zero temperatures, move about in huge storage rooms, preparing prize meat for shipment to market. Refrigeration's "Hidden Services" start here.

Then, by rail and highway, this meat moves out to your community... Travelling hundreds of miles through all kinds of weather, hot or cold, it arrives



temptingly fresh only because of the carefully engineered and controlled Refrigeration in modern railroad cars and motor trucks.

A-P DEPENDABLE REFRIGERANT VALVES are vital to every "Hidden Service" of modern Meat Refrigeration—in storage, processing, transportation and display. Quietly, efficiently, accurately, they operate day after day, month after month, to keep hard working Refrigeration Units running smoothly, with a minimum of attention, to serve the wartime food-protection needs of the Nation.



Model 204



Model 205



Model 215

AUTOMATIC PRODUCTS COMPANY

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MILWAUKEE WISCONSIN

Expert Department

100 Verick Street . . New York City

A-P DEPENDABLE
Refrigerant Valves

of specific definition according to the local problems raised.

Regulations imposed upon refrigeration service, he brought out in his discussion, have been held wherever possible to the lines of maximum prices current in March, 1942. The hourly rates for service, and the top prices for refrigerators, prevailing during that month will remain as operating standards probably for the duration, he warned, with little possibility of change except in the face of obvious widespread injustice.

Where the letter of the law inflicts hardship upon an individual, however, or where it fails to apply to his case, Warnshuis pointed out, the dealer immediately should write to his local OPA headquarters, outlining the circumstances and asking what steps he can take. "Call by telephone if you wish," he added, "but for your own protection, put it down also in a letter. Our reply will protect you in any action you may take on our recommendation, and when we forward your letter to Washington the entire appliance service field comes that much nearer to getting a fair redefinition of the law."

Penalties for Violations

The penalties for violations of Governmental regulations were discussed by Robert Watson, OPA compliance attorney for the Detroit district. Every dealer does business under the implied sanction of OPA, and any failure on his part to comply with OPA regulations brings a warning notice from the district office. Continued infractions result usually in a petition by the district office to the locally authorized court for an injunction restraining the dealer from further business while the facts are looked up. A disregard of the injunction brings down immediate contempt proceedings with the penalty of a fine or a jail sentence. The district office can, on the strength of its findings, suspend or entirely revoke a dealer's right to do business. The latter penalty is seldom imposed, Watson pointed out, the first instance in this regional area occurring only recently, in Indiana. (Detroit lies in the regional area covering Michigan, Ohio, Indiana, Kentucky, and West Virginia, with headquarters in Cleveland.)

Conviction on the price violation charge

is almost as drastic: a year's imprisonment or \$5,000 fine, or both. Two Detroit refrigeration dealers already are up before the court on this charge, he disclosed. The consumer who has been overcharged also can bring charges against the dealer, Watson stated in a criminal suit for damages. He may claim \$50 damages or, if three times the amount he was overcharged totals more than \$50, he may claim the greater figure.

So far, in all cases in the Detroit district, Watson added, the amount of the damages has been settled out of court. The publicity that will accompany the first court hearing of such a case, he prophesied, will increase public awareness and individual consumer action thereafter. He cited the example of a court decision handed down in California, awarding \$50 for a three-cent overcharge on a bunch of bananas.

With prices steadily rising, he concluded, the law inevitably will be revised from time to time. The public will not be able to keep track of all the regulations laid down for their protection; it is up to the dealer to know every ruling affecting his business, and to act accordingly. All of these regulations have record-keeping requirements. "For your own safety," he advised his listeners, "do these two things:

"1—Keep in touch with your association or with someone who receives and studies the OPA service trades bulletins, and follow them to the letter.

"2—Write to your district OPA office, at 600 Griswold Street, Detroit, whenever the law is not clear, or seems inadequate or unfair."

Questions Are Answered

At the close of his talk Watson asked for questions from the dealers, and for more than another hour he and Warnshuis answered these questions.

These questions covered various subjects including prices to be charged by dealers who were not in business in March, 1942; flat repair estimates; basis of charge for making parts not available from supply dealer; selling trade-ins; posting prices in the store. In regard to a repair man employed by a service shop doing work on his own time, he also is governed by the prices charged during March, 1942, it was stated.

New Device Is Designed to Test Crystal Radio Sets

A NEW device for testing crystal radio sets under low temperature conditions has been developed by R. E. Meeker of the Temperature Engineering Corp., Kansas City, Mo. The need for such a device was created from the extensive use of piezo electric crystals in connection with fixed channel or one way radio circuits for tanks, planes, trucks and other means of transportation in war work. The need was for a device which would provide various temperatures to test the activity and frequency accuracy of the crystals.

To properly test piezo electric quartz crystals, the tests should be carried throughout a wide range of temperatures to as low as minus 80° F. For this work a device was needed in which a large number of crystals could be tested simultaneously while the atmosphere within the testing device was accurately controlled at the different testing temperatures required.

It was also necessary to develop a device for connecting an electric circuit with the individual crystals while they were being tested and also an indexing mechanism was needed to definitely identify each crystal during the time it was being tested.

Description of Testing Cabinet

The testing device which was developed by the Temperature Engineering Corps consists of an insulated cabinet mounted on suitable supports. The cabinet proper consists of an outside tempered wood casing and inner lining mounted on suitable supports. The space between the inner and outer lining is filled with insulation. The cabinet is closed at the top by means of a heavily insulated hinged cover made of the same metal casing which surrounds the insulation. Between the top of the cabinet and the cover are gaskets which assure a pressure-tight fit between the cover and top of the cabinet.

The insulation, it was found, may be of any suitable type effective to maintain the

testing space within the cabinet relatively unaffected by external atmospheric conditions. The spun glass or fibrous insulations commonly used in building construction or refrigeration have proved satisfactory.

An electrical resistance coil supported between grids is used to heat the enclosure within the test cabinet. Electrical connections are made both to the resistance coil and to an electrical circuit outside of the cabinet to supply heat to the enclosure. In this circuit is interposed the thermostatic control. To cool the enclosure a refrigeration unit is mounted beneath the cabinet with the cooling or refrigeration coil of the unit placed within the cabinet. In brief, the refrigeration unit consists of a compressor driven by a motor mounted upon a base.

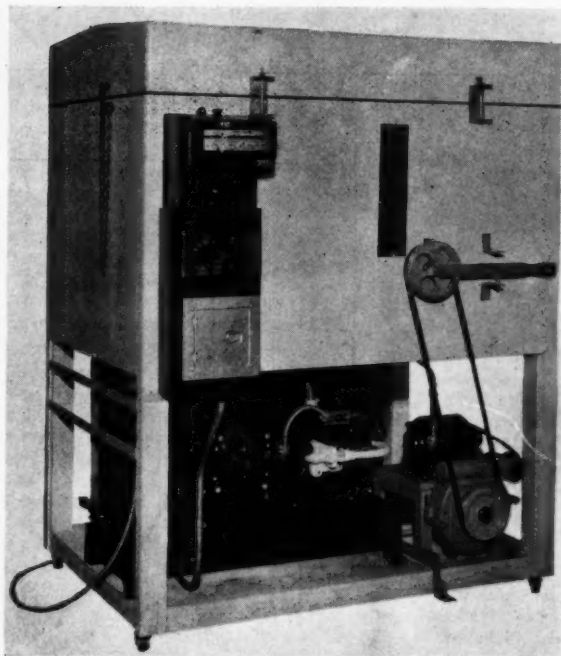
The refrigerant compressed in the unit is circulated through pipes to and from a cooling coil mounted behind the partition of the test cabinet. Supported adjacent the cooling coil and the heating unit is a circulating fan driven by motor, the electric power for which comes from a source outside the cabinet. A sensitive feeler bulb connected into a thermostatic circuit of the remote type having a recorder on the outside of the cabinet, registers accurately the temperature of the atmosphere within the test cabinet.

The particular heating and cooling mechanism for controlling the temperature of the atmosphere within the test cabinet as described above is more or less arbitrary, it being essential only that an accurate control and a uniformity of temperature be maintained throughout the space within which the testing is being done.

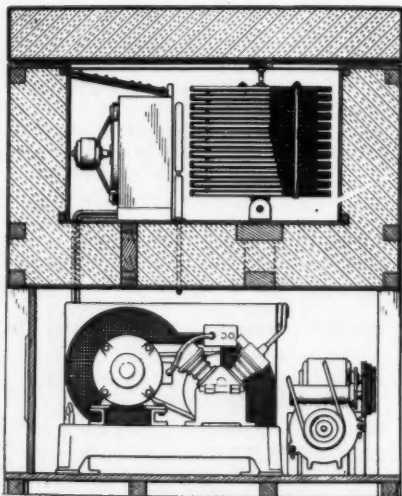
Plastic Enclosures for Crystals

The piezo crystals to be tested are mounted in plastic enclosures. Electric terminals serve as a means for connecting the crystals into the radio circuit in which they are employed and also as terminals for connection to the test circuit.

The holder for the crystals consists of a



Exterior view of Crystal Tester designed by Temperature Engineering Co., Kansas City, Mo.



Cutaway view of Crystal Tester developed by Temperature Engineering Co., Kansas City, Mo.

number of discs made up of upper, intermediate and lower layers of the same thickness, the intermediate layer separated from the upper and lower layers by two thin layers of wood or other insulating material. These discs at first presented a problem through their tendency to warp and get out of shape because of the wide range of temperatures maintained. This problem was met by the insulating device described above. The intermediate disc is of somewhat smaller diameter than the upper and lower discs. These upper and lower discs are notched, the notches being the same width as the plastic casings surrounding the quartz crystals. The distance between the upper and lower disc, as spaced by the intermediate disc, corresponds to the depth of the case which holds the crystals. Consequently, the notches are of such size that they closely fit the crystal casings.

A number of the discs are mounted upon a vertical shaft and held in place on the shaft between upper and lower flanges. The shaft is pivoted above and below upon bearing members. The upper bearing member is mounted on a bearing support bar which

is described later in connection with the removal of the holder from the cabinet. A lower bearing member is supported upon a pedestal in the floor of the enclosure.

On the lower extremity of the shaft is a beveled gear, which meshes with a similar gear mounted upon a horizontal shaft carried by a bearing support. This shaft extends through the wall of the cabinet and upon the shaft outside of the cabinet is mounted a pulley, an index wheel and a manually operable handle. The shaft is driven by a motor mounted beneath the cabinet. The speed of the motor is reduced through a worm and a reduction gear, power being transmitted from the reduction gear shaft through pulley and belt to the pulley. The speed of the reduction motor is reduced so that the crystal holding discs rotate with the shaft at a rate of approximately one revolution per minute.

The testing devices which have been constructed and put in use have had crystal holding discs eighteen inches in diameter with sixty slots or notches around the circumference of each disc for the crystals. Ten tiers of discs have been mounted on the shaft, so that the holder would accommodate six hundred crystals for testing. To insert or remove the crystals in the pockets or notches provided in the discs, the cover of the cabinet is swung back on its hinges and the bearing support bar carrying the upper bearing is released by means of the latch, and the support bar and upper bearing removed. The disc holders mounted upon shaft can then be lifted out of the cabinet and the crystals either inserted or removed from the pockets in the discs.

Testing Mechanism

The mechanism for testing the individual crystals is as follows: In one side of the cabinet, preferably in alignment with the vertical shaft, is a slot through the insulation of the cabinet. On the outside of the cabinet covering this slot is a panel, and on this panel are mounted electrical connections lettered from A to J.

Inside the cabinet on the panel are mounted springs which correspond in number with the terminals on the outside panel. Mounted on the individual springs are insulated strips. At the end of each of these strips is a metal contact. These metal contacts are connected to the terminals on the outside panel by wires.

In order to control the tension imposed on the springs and position the contacts accurately with relation to terminals of the crystals, an angle bar is hinged behind the springs, the edge of the angle contacting the top curvature of the springs. To raise and lower the position of the angle and the position of springs, which in turn positions the contact points with relation to the terminals of the crystals, a thumb screw is provided. The mechanism is such that the two terminals of the individual crystals in the separate tiers or discs will wipe against the contact points, completing the circuit through wires with the terminal on the outside of the panel. By means of jacks inserted into the terminals a test circuit is made with one crystal on each disc. By rotating the disc all of the crystals arranged around the circumference of the discs in the separate tiers are contacted individually and can be individually tested.

Indexing Mechanism

To ascertain accurately which tier of crystals is in alignment with the testing circuit, an indexing mechanism is used. This mechanism consists of a wheel mounted upon the portion of the shaft extending outside the cabinet. The rim of this wheel is perforated with the same number of holes as there are pockets in the discs for holding the crystals. A spring latch mechanism is insertable into any one of the holes on the rim, holding the shaft in position while a pointer at the top of the index wheel designates the particular crystal being tested. Thus the indexing mechanism designates the location of the crystal around the circumference of the disc, while the letters on the panel denote the position of the crystal on the vertical tier being tested.

Suitable switches or electrical controls for starting and stopping the crystal holder, the refrigeration and heating units and the motor driving the circulating fan, are located on a control panel mounted in a convenient place on one of the end walls which surrounds the refrigerating unit and drive mechanism.

Norman Sebastian
White Water, Missouri

Please renew my subscription immediately.
I like your magazine fine.

ELECTRICAL WORK AND MOTORS

(Continued from page 24)

However, brushes are used which will connect the coils directly under the field coils in series with coils offset from those under the field coils. In putting these coils in series we cause the poles to be offset from under the field coils and the repulsion then causes a torque or twisting effort and the armature starts to turn.

As the motor builds up to speed, weights throw out, causing a short circuiting device usually referred to as a necklace to short circuit the commutator segments together. The motor then operates as an induction motor similar to the squirrel cage motor; except that instead of having low resistance bars making coils of one turn we have coils of more turns in which higher voltages are generated, and having higher resistance have smaller current flowing through them.

The magnetic field, however, is approximately the same since the magnetic field depends on the number of ampere turns and in this case we have more turns but fewer amperes. At the same time the weights may cause the brushes to lift off the commutator as the commutator segments are short circuited together. Since the brushes serve no further purpose, they may be removed from the motor without affecting the motor's operation.

Reversing Motor

To reverse the repulsion-induction motor we simply shift the brushes slightly so as to cause the coil under the upper field coil to be put in series with the coils on the opposite side from those in the previous case. This causes the torque to be set up in the opposite direction in starting. It is important that the commutator bars be shorted together before the brushes lift off the commutator; and it is important that the spring which acts against the centrifugal weights return the brushes to the commutator and remove the short circuiting device from the commutator when the motor stops. In some motors of this type the brushes ride continuously on the commutator, but have no effect after the motor gets up to speed.

NOTE: This series of articles will be continued in the March issue with tables giving detailed service instructions for capacitor-start, induction-run motors and split-phase motors.

FROZEN FOODS HELP SUPPLY FOOD NEEDS OF NATION

(Continued from page 28)

such a purpose. And this means more sales of frozen food cabinets and another talking point for the sale of home refrigerators. And, of course, more service repairs and maintenance work.

New cabinets will be on the market, not only for food distributors but for the home. There will be a demand for family storage of frozen foods, for cooks and housewives all over the country, having become accustomed to this method of food packing and preservation with its convenience and tastiness, will continue using them, many on a greater scale than ever before. And the neighborhood grocer will, in ever-increasing numbers, install frozen food cabinets to meet the demand. It all adds up to new business for the refrigeration service man and dealer.

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SUPPLY OF COPPER NOT ADEQUATE

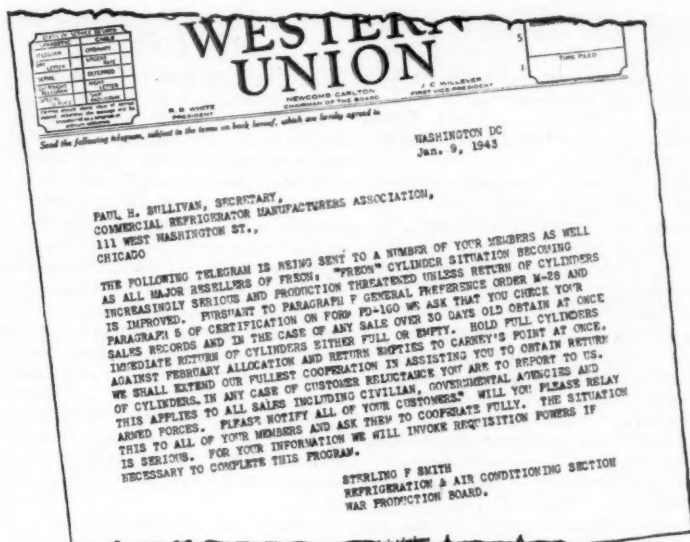
RECENT statements quoted in the press have conveyed the impression that the supply of copper is adequate to meet all military and essential civilian requirements, according to H. O. King, director of the WPB Copper Division. Widespread acceptance of such statements he said, would constitute a threat to the war production program. The supply of copper is not adequate and never will be while this war is on.

"A number of WPB limitation orders have eliminated the use of copper from thousands of civilian products," he continued. "The Army and Navy have saved considerable amounts of copper by reducing their requirements wherever possible. A vigorous program of substitution has been carried on."

"Further, several hundred million dollars are being spent on facilities for new projects to increase primary production, while scrap programs have resulted in the collection of twice the tonnage which was expected at the beginning of 1942."

"Because some of these efforts have been successful, and have resulted in a reduction of the overall deficit is no reason for the relaxation of restrictions on use, or relaxation of our efforts to acquire every pound of copper wherever it is available."

May Requisition Unreturned Cylinders



TO Paul Sullivan, Secretary of the Commercial Refrigerator Manufacturers Association, goes thanks for the loan of the telegram reproduced above. The seriousness of the cylinder situation has become such that the War Production Board has felt it necessary to issue this very grave warning.

While Kinetic Chemicals, Inc., Wilmington, Del., emphasizes the fact that there is no shortage of Freon-12, the shortage of cylinders in which to make shipment is real enough. Freon-12 deliveries can be maintained without difficulty if empty cylinders are promptly collected and returned.

Enough Freon cylinders are in existence to meet civilian demands, but on account of the steel requirements of the war production program, new cylinders are out of the picture. All users are urged to assist in carrying out the following four-point program:

1—Check records now and find out who

has cylinders in which Freon was sold this year.

2—Telephone every customer who has Freon cylinders and urge them to return their empties at once.

3—Send truck to bring in cylinders not otherwise obtainable.

4—Ship empties to Kinetic Chemicals, Inc., Carneys Point, N. J.

CASUALTIES ON HOME FRONT

SINCE Pearl Harbor more Americans have been lost to the war effort through accidents on the home front than have been killed, wounded or captured in military and naval operations. Announced casualties in the United States armed forces since Pearl Harbor have totalled 58,307, including those missing. Casualties to American workers through on and off-the-job accidents in the same period have numbered 46,300 dead, 4,000,000 injured.—PAUL V. McNUTT.

REPAIRING ELECTROLYTIC CAPACITORS

THERE are some things about an electrolytic capacitor that can be repaired in the field. Among them are broken leads which may be readily replaced or repaired by soldering. Acid core solder, however, should not be used because of its corrosive properties. A rosin core solder or "Nokorode" paste and plain soft solder will do a good job if applied with a small iron. Keep the capacitor in a vertical position during the repair operation.

If the blowout plug in the capacitor breaks and allows some of the electrolyte to run out, a ground may result and although the capacitor may continue to operate satisfactorily it will often give an electrical shock to the customer. If only a small amount of electrolyte has been lost, these capacitors can be repaired in the following manner:

First, remove the paper tube from the capacitor and clean thoroughly of all dust and moisture. Next, if the vent plug has been forced out of place, press it back into place and apply rubber cement around the vent, being careful to thoroughly seal it. Shellac or liquid cellulose cement may also be used for this purpose. Finally, a piece of bond paper or letter paper should be coated on both sides with rubber cement and allowed to dry. Then the paper is placed over the vent opening, covering the edges of the vent. Press the paper down thoroughly and allow to dry in order to procure a good seal.

If the paper tube is so badly saturated that it cannot be used, the capacitor can be re-insulated with waterproof paper and sealed with paraffin wax. Be sure the capacitor is reinstalled in a vertical position with the terminals at the top.

NEW ORDER LIBERALIZES SALE OF REFRIGERATORS TO FARMERS

A LIBERALIZATION of the War Production Board's freezing order on mechanical refrigerators, permitting farmers growing food for war but who are not within areas covered by ice delivery to purchase new units, has been announced. According to this order, which permits application for refrigerators on Form PD-427, the farmer is presumed to come under the provision for public health, especially if he has small children. The order and the form came through the Office of the Division of Industry Operations, WPB, and

permits disposal of mechanical refrigerators already manufactured but held in warehouses throughout the country since the freezing order last February.

CHECK AND DOUBLE CHECK THE DIAGNOSIS

HERE is an example of how improper diagnosis of a minor trouble can create a major trouble with its attendant additional labor, material and cost. The example is cited from the actual experiences of a Stewart-Warner serviceman.

The serviceman was working on a Stewart-Warner Dual-Temp refrigerator which uses a capillary tube system. The operating pressures were as follows: abnormally high head pressure and suction pressure very close to zero (possibly a slight vacuum). The unit ran continuously and no refrigeration was produced with the exception that a few inches of tubing at the outlet end of the capillary was frosted.

After a brief consideration of this information, the serviceman diagnosed the trouble as a *partially plugged capillary tube* and recommended replacement of the tubing assembly.

However, the same serviceman noted that when he shut off the refrigerator, the high side pressure dropped rapidly—*indicating that the capillary was not plugged*. He then immediately revised his diagnosis to the following which was actually the true fault. This refrigerator had a leak in the low side of the system. Nearly all of the refrigerant had been lost through the leak on the low side and the compressor had drawn in air through the leak. This was due to the vacuum created in the low side of the system as soon as most of the refrigerant had leaked out. It was this air which created high head pressure.

Thus careful observation of *all* symptoms saved this serviceman the trouble of replacing the tubing assembly. Had the tubing assembly been replaced, the system purged and recharged, it may have apparently corrected the trouble. On the other hand the leak might not have been corrected by replacement of the tubing and thus the same complaint would occur again.

The Dual-Temp refrigerator is made somewhat more complicated by its dual temperature area connected in series in the same circuit. Readers interested in learning more of its function are invited to drop a line to the editor of this journal.

The Question Box

Readers are invited to send their problems pertaining to the servicing of household refrigerators and small commercial refrigerating equipment to "The Question Box."

BRINE TANK LEAKS

QUESTION 534: I would like to know the effect of Thawzone or alcohol in a sealed Westinghouse or General Electric compressor? I have several jobs that I have placed driers on but I wanted to know what would happen if I put Thawzone in them.

I also have another problem—a Nizer ice cream cabinet with a leak in the bottom. I would like to know if there is some way I could stop this leak without tearing the cabinet down? The cabinet is very old and after the war is over we are going to junk this cabinet but at the present we must use all old cabinets. Would flax-seed or some make of radiator seal repair this leak for a short time? What effect would calcium chloride brine have on this method? Of course, this is only a crazy idea but I was just thinking.

ANSWER: It is usually very difficult to repair leaks in ice cream cabinets without entirely dismantling the cabinet. I know that you appreciate this through your experience in this field. They can be repaired, of course, from the inside, if you have any means of determining just where the leak is, but the difficulty is always in locating the leak.

I don't believe that flaxseed or any of the various radiator seals would be of much value in this type of repair. Most of these remedies depend on a different set of conditions than those found in an ice cream cabinet. Furthermore, the quantity of radiator seal necessary to a job of this kind would make it rather prohibitive.

I think that perhaps the best manner of attack is to remove all the brine and as much of the other equipment inside the tank as possible, and in this I am assuming that the leak is somewhat on the bottom of the tank or within an inch of the bottom along the sides. After the tank has been drained and dried, I would spread a quarter inch layer of hot tar on the bottom of the tank, or you could also paint on a thick coating of some tar base sealing compound. Providing the leaks are not too large this

treatment should produce much better results than the use of any seal in the brine itself. The only disadvantage of using a hot tar is that under the cold temperatures in the tank, the tar may shrink and crack, for that reason it might be better to use some of the sealing compounds, such as a roofing cement which will not harden and will retain some of its resiliency.

NOISY GRUNOW

QUESTION 535: I have been doing service work for some time and have sort of specialized on Grunows for a couple of years, but have recently been stumped on Model K unit. I can make them freeze and cycle perfect but I have three on my list that start with a chattering noise and continue to make this noise for some twenty to fifty seconds and then they settle down and run quietly through the cycle, but again make this noise on beginning of the on cycle.

Each of these units have had the buffer springs removed (before I got hold of them) and I am wondering if this is causing the vanes to bounce, as this is undoubtedly where the noise comes from.

ANSWER: The noise you describe in the Grunow is an entirely new one to me, I have not heard of anything of this nature before. However, I can readily understand that such a thing would happen, if as you say, the buffer springs have been removed from the vanes of the compressor. This would undoubtedly cause the vanes to bounce during operation, and I am rather surprised that you are not also experiencing inefficient operation. It would seem that with this added pressure removed from the vanes there would be considerable by-passing of gas past the vanes, thus causing an inefficient operation.

I suppose, however, after the compressor has obtained maximum speed, there is sufficient centrifugal force to keep these vanes out against the walls of the compressor. I think the best remedy would be to replace the springs removed.

CHIEFTAIN UNIT ERRATIC

QUESTION 536: Ever since I replaced the compressor of the condensing unit of my refrigerator I have been having trouble with the suction head being too low.

I am enclosing a diagram of the installation but by way of explanation let me say that it is a remote installation using a Chieftain twin compressor, methyl chloride gas, a Weatherhead rechargeable dehydrator filled with silica gel located in the liquid line after the liquid receiver. Also uses a Mayson expansion valve and the evaporator is of the type of continuous tubing wrapped about the freezing unit shell. That is the general make-up.

As stated before, it was necessary to set the expansion valve so that the back pressure balances at six or seven inches of vacuum in order to keep it from frosting beyond the outlet of the evaporator, whereas before I replaced the compressor the back pressure was two to four pounds, but I did not have the Weatherhead dehydrator in the line at that time.

Now, further trouble has developed for some reason, for the suction line frosts back to the compressor during the first minute of operation and then melts off. Also when the unit turns on there is a loud swish which can be heard readily on the outside of the cabinet. It sounds rather like three or four intermittent rushes of refrigerant which lasts for just a few moments and then everything appears to be normal.

I cannot account for the frost-back now since the valve setting was not changed, the rushing noise, and the low suction pressure.

I realize that you cannot positively diagnose this case eight hundred miles away, but I am confident that you can give me some hints which will be helpful in putting the machine in proper running and operating order. Might say that the cycle of operation is: five minutes running or "on" time and twelve to fifteen minutes "off" in normal operation.

ANSWER: It is my belief that you have one or both of the following two conditions in your Chieftain refrigerating system. One is that the return line is restricted, causing a certain amount of expansion between the restriction and the compressor, so that frosting occurs in that area. This would also cause the extreme low suction pressure which you are experiencing.

The swishing noise that you hear and the frosting of the return line for the first few

minutes of operation would indicate that you are getting an off-cycle flooding condition. With an automatic expansion valve, this would probably be caused by a leaky needle and seat in the expansion valve which permits the evaporator to flood with liquid refrigerant during the off-cycle. When the machine starts up, the rush of liquid through the coil would cause a swishing noise and liquid refrigerant being carried over to the suction line would cause it to frost.

A third possibility of why you have such a low suction pressure is that your compressor is too large for the size evaporator used. Where such an unbalanced condition exists, you have the situation where the refrigerant is pumped through the evaporator faster than the evaporator can absorb heat and evaporate the refrigerant, and in order to reduce the amount of liquid being pulled through the evaporator and thus balance the system, it is necessary to set your suction pressure down much lower than normal.

You haven't stated what size refrigerator you are using, but it would seem that a twin cylinder compressor operating with methyl chloride would have much more capacity than necessary for anything less than a ten cubic foot refrigerator.

As a test of this condition it may not be too difficult for you to remove the discharge valve of one cylinder of the compressor permitting it to operate on one cylinder only, thus determining whether the reduction of capacity in the compressor will overcome your troubles.

STEWART-WARNER STOPS

QUESTION 537: The other day I was called in to look at a 1937 Stewart Warner. I looked on the name plate on the frame for the model number. It gave a serial number and a factory number, also it is charged with 5 lbs. of SO₂. On the bottom of the plate it had J-6, which I take to be the model of the box.

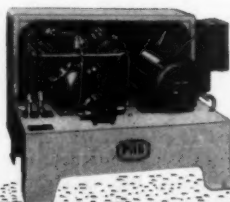
The complaint is, that the box once a day just doesn't go on. This was noted when the evaporator defrosted and the ice cubes melted. The rest of the day it runs normally. This happened every day for about a week. On the day that I was there it didn't happen. It ran when a button on the motor was pushed.

The compressor is not bound up and the motor turns freely, so it couldn't be overloaded. I checked the control and it is all right. The box runs from one to two min-

**"Take Advantage
of PAR'S
Exchange Policy!"**



So that PAR condensing units now in service can maintain their same high efficiency and economical, dependable service, offer your customers PAR'S exchange service of valve plates and compressor bodies. Badly worn or unserviceable units may be exchanged for units which carry the same rigid tolerances as the original equipment, for a fraction of their original cost. You will not only help to keep their equipment in tip-top condition but will promote good-will and confidence for yourself. Write for complete details of PAR'S exchange policy.



PAR
DIVISION

*Manufacturers of
PAR Commercial Refrigeration Units*

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utes and is off from four to nine minutes. I considered this good as I had been opening the box. It runs quiet.

The motor is a Delco Capacitor Motor. I believe it is Model 352. About two years ago the motor was repaired. But I don't know what was done to it. Do you think the trouble is in the motor? Why did it go on when the button was pushed? Or is that to reset a tripped overload switch?

ANSWER: I am inclined to feel that the power supply to this home might have considerable variation in the line voltage. If there is a considerable drop in line voltage while the motor was operating, the overload device on the motor might open the circuit. This action would be normal because the speed of the motor would be reduced as the line voltage decreased and the current through the windings would increase. The result would be that the overload device would open the motor circuit and the motor would not again start until the reset button was pressed. This is exactly the reaction obtained.

We do not preclude the possibility that the overload device may be defective, but we would recommend that the line voltage in the home be carefully checked during the period that this phenomenon occurs. As a last resort, of course, the overload device on the motor should be carefully inspected by a party who is acquainted with the repair of this particular type of motor.

KELVINATOR OVERCHARGED

QUESTION 538: I have in my repair shop a Kelvinator household refrigerator, a Model KS5, having a single cylinder compressor, and originally having a low side float. The low side float on this job leaks so much, and being unable to replace it with a similar evaporator, I had to buy a replacement high side float and evaporator. After installing this the suction line frosted back to the compressor with an evaporator temperature of 20°. Believing that there may have been an obstruction in the suction line, I replaced the suction line with a new one, which did not eliminate the trouble. The next step I took was to wash out the float valve with carbon tetrachloride, thinking that there may have been particles underneath the float valve needle. After doing this, the machine continued to operate as before. The suction pressure on this unit while running will be about 5 degrees on sulphur which the unit is charged with, but the suction line

still frosts back to the compressor. I took off the float valve, and put on an automatic expansion valve. The refrigerator worked fairly good after that, but I knew it wasn't right and brought it back into the shop. I have been trying to make it work with the float, but it doesn't seem to make any difference what I do to the machine with this float on, it still operates as above. The only solution that I can see to the problem is to replace this float with another that I know is operating correctly. Also, the liquid line and suction line is mortised into the wooden cabinet frame, which causes the cabinet to sweat on the outside down that corner where the lines run. Presumably, due to the suction line frosting back. This unit was originally charged with 4 lbs. of SO₂, but in making the change over, these refrigerators are charged with a pound and one-half of SO₂, which operates this model perfectly, as I have done many of them before.

Is it possible for me to install a horizontal float underneath the cabinet top to eliminate the frosting of the liquid line from the float to the evaporator as it now frosts from the float to the evaporator?

ANSWER: I am wondering if in making the change over from a low side float to a high side float on the Kelvinator, whether or not you had the system overcharged. The refrigerant charge in a high side float system is very critical and where an ounce or two more refrigerant than required is added the suction line will frost.

The usual method of determining the proper amount of refrigerant in a high side float system is to charge until frost appears on the suction line then purge off a small amount of refrigerant until the frost line gradually returns to within two or three inches of the evaporator outlet.

The symptoms you have described fit in very well with the theory that your system was overcharged with refrigerant, and I believe that it would be well worth while re-installing the high-side float and obtaining a balanced charge of refrigerant in the manner I have described.

An automatic expansion valve is not very satisfactory with a flooded type of evaporator, and I hardly think it would be worth while pursuing this method of correction. In order to prevent the liquid line from frosting with a high-side float system, it is usual practice to use an eighth inch liquid line between the float and evaporator. This is intended to prevent expansion of

"The Chart is a necessary part of my equipment"

**so says this
service man**

• Now that the Calculator is being put to the test of practical use in the field, we have had a number of letters from service men testifying to its value. This one is typical.

**WRIGHT'S
H. B. P.
CALCULATOR**

Sometime ago I purchased a Head-Back Pressure Calculator from you, but misplaced it. The chart is a necessary part of my equipment, so please send me another.

J. V. Farmer

The purpose of the Head-Back Pressure Calculator is to quickly determine the proper head pressure, for the following refrigerants when the suction pressure, room temperature or mean water temperature is known.

Carrene	Methyl
Isobutane	Freon or F-12
Sulphur Dioxide	Ammonia
Carbon Dioxide	



Actual Size $3\frac{1}{2}" \times 3\frac{1}{2}"$.

A Vestpocket Tool Every Service Man Should Carry

A number of troubles can be detected by comparison of the existing head pressure and what the head pressure should be, but in the past there has been no convenient method available to the service engineer to determine what the correct head pressure should be. Such variable conditions as the suction pressure, room temperature, water inlet and outlet temperature, kind of gas used, etc., all determine the proper head pressure. It is not practical to depend on one's memory of other similar conditions or to just use snap judgment when this handy calculator gives you the correct answer so easily. Send for it today! Sturdily constructed, with oil-proof finish, for on-the-job use.

POSTPAID \$1.00

NICKERSON & COLLINS CO.
435 N. WALLER AVE., CHICAGO

the refrigerant until it reaches the evaporator; however, in the warm weather an eighth inch line will also sweat to some extent, and as an added protection the line is usually insulated with rubber tubing.

WPB ISSUES SUSPENSION ORDER

CHARGED with violating priority regulations, a suspension order has been issued against the General Refrigerator Corp., San Francisco, Calif., it was announced by the Regional Compliance Division of the War Production Board. The Compliance Division charges that the corporation purchased 10,800 ft. of copper tubing and 151 electric motors through the use of an A-1-a preference rating despite the fact that only 176 ft. of copper tubing and 24 electric motors were necessary to fill the purchase orders of the customer.

This improper expansion of preference rating, it was charged, enabled the company to obtain excessive delivery of materials which were not used for the purpose specified in connection with the preference rating, thereby hampering the war effort by diverting scarce materials to uses not authorized by WPB.

The suspension order deprives the company of all priority assistance and allocation of materials except as specifically authorized by the War Production Board, from December 9, 1942, to March 9, 1943.

SALES CONCERN REORGANIZED

JOHN K. BUSH has become Vice-President of Howard C. Korff, Inc., Lockport, New York, in a recent reorganization of that concern, which is one of the most prominent in that part of the state in the distribution of General Electric appliances and furniture.

The officers of the corporation are President and Treasurer, Howard C. Korff; Vice-President and Service Manager, John K. Bush; Secretary, B. Kenneth Jones. Under the reorganization Mr. Korff, founder of the company, which formerly operated as Korff & Schimschack, acquired the stock of Albert Schimschack, his associate.

Mr. Bush is widely known among members of R.S.E.S. He has long been prominent in the affairs of the Society, and is at present a member of the Board of Directors.

REFRIGERATION WAR COUNCIL ORGANIZES PERSONNEL

JOHN WYLLIE, JR., Temprite Products Corporation, Detroit, who is chairman of the National Refrigeration War Council, announces that in the organization meeting held in New York on January 6 it was decided that the Council shall be made up of the Presidents or designated representatives of the refrigeration industry organizations. These are to represent their organizations at meetings of the Council. An alternate shall be appointed and shall be authorized to act in the absence of the principal.

The individuals named to represent their organizations in the Council are as follows:

A.S.R.E.: C. R. Logan, delegate, Superior Valve and Fittings Co., 1509 W. Liberty Ave., Pittsburgh, Pa.

A.C.R.M.A.: C. E. Wilson, delegate, Worthington Pump & Mch. Co., Carbon-dale Division, Harrison, N. J.; W. H. Aubrey, alternate.

S.R.C.A.: E. A. Terhune, delegate, Servel, Inc., Evansville, Ind.; B. J. Scholl, alternate, Brunner Mfg. Co., Utica, N. Y.

C.R.M.A.: J. W. Hart, delegate, McCray Refrigerator Co., Kendallville, Ind.; C. V. Hill, Jr., alternate.

R.E.M.A.: John Wyllie, Jr., delegate (Chairman), Temprite Products Corp., 47 Piquette Avenue, Detroit, Mich.; R. H. Luscombe, alternate, Penn Electric Switch Co., East Monroe St., Goshen, Ind.

N.S.J.R.A.: Alex H. Holcombe, Jr., delegate (Vice-Chairman), Victor Sales & Supply Co., 2222 Arch Street, Philadelphia, Pa.; C. E. Borden, alternate, 145 High Street, Boston, Mass.

R.S.E.S.: Charles C. E. Harris (Secretary), Harris Refrigeration Co., 292 Main Street, Cambridge, Mass.

NEW EQUIPMENT CONCERN

THE Mountain Air Products, Inc., of Sixth St. and Central Ave., of Connersville, Ind., has filed articles of incorporation with the Indiana secretary of state at Indianapolis designating Angus E. Deaton of the same address as its agent. The company has 1,000 shares of no par value and is formed to manufacture and sell refrigerating equipment. The incorporators are Harold B. Parker, Earl Crawford and Paul F. Deaton.

WAR PLANTS

NEED

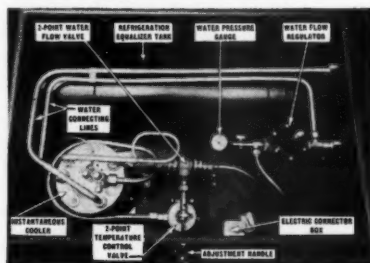


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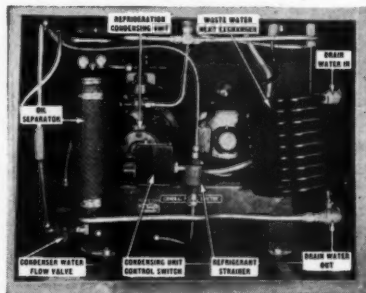
TEMPRITE

X-RAY REFRIGERATING UNIT!

IN MANY of our war industries, industrial X-Ray machines are becoming a vital part of their production lines. These machines are used to take thousands of X-Ray photographs of various materials and parts in search for defects that might cause serious failures when our men's lives depend upon the proper operation of our war equipment.



Inside Top View



Inside Machine Compartment

To take X-Ray film photographs on a production basis it is necessary that all factors contributing to the quality of the prints be controlled within extremely accurate limits. These main factors are: (1) **IMMERSION TIME**, (2) **SOLUTION STRENGTH**, (3) **SOLUTION TEMPERATURE**.

The first two factors are controlled by the X-Ray operator, however, the third, *Solution Temperature*, varies with surrounding conditions that may change constantly, thus rendering the control of the first two factors practically useless and resulting in unsatisfactory prints.

It is here that the Temprite X-Ray Refrigerating unit plays such an important part in industrial X-Ray.

With this unit large quantities of *controlled temperature water* can be circulated around the processing solution containers, placed in the developing tank, thus insuring definite control of the solution temperatures at all times.

DEALERS: HERE'S HOW TO SELL IT!

If you are among those dealers who have not had the occasion to contact war plants and are unfamiliar with priority requirements, the Temprite Products Corporation will be pleased to send you all the information necessary in making a sale of this kind. Simply address your letter to our Sales Department and it will be sent immediately.

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous



Liquid Cooling Devices

45 PIQUETTE AVENUE

DETROIT, MICHIGAN

Business and Government in Coming Post-War World

DEFINING the post-war period in America as "the time after 1948," Lewis H. Brown, president of Johns-Manville Corporation, said that he looked forward "to the post-war future in the hope we can profit by the mistakes of the twenties, the mistakes of the thirties and the lessons of war in organizing a better way of life for all of us here in America."

A chief lesson to be learned he said, is that "cooperation, not conflict, must guide government, business, labor and agriculture in their service to our people."

Mr. Brown spoke on the subject, "Using Private Business Agencies to Achieve Public Goals" before the Washington members of the American Economic Association.

Pointing to some of the activities of the Reconstruction Finance Corporation, the Home Owners Loan Corporation and the Federal Housing Authority as examples of real cooperation on sound constructive lines, Mr. Brown said that these government agencies made successful contributions to our national progress because: "Here was government aid functioning as an accelerator to human initiative and resourcefulness."

Encourage Private Enterprise

He said that in the post-war period "we must encourage the private enterprise system to carry the load of providing employment to the utmost, so that government's load will be at a minimum."

In answer to the question, "What do we mean by the Post-War World?", Mr. Brown said, "On this everyone is entitled to his own definition based on his guess as to the length of the war, and the nature of the reconversion process from war to peace. For my purposes here I will assume that the Axis nations will not all be defeated before 1945 and that in the United States the major reconstruction from war to peace will take up to the end of 1948. I will define the post-war period as the time after 1948."

Emphasizing that unemployment has been a major problem of Europe since the dislocations of War I and of the United States since the crash of 1929, Mr. Brown said that the great mistake of the first years of the depression in America was two-fold: (1) Failure to understand that this downward dip in the business cycle

was a depression of unprecedented magnitude and could not be cured by "temporary" expedients. (2) Failure to understand how to get the economic machine back in operation when it got out of balance and stopped.

"To the everlasting credit of the New Deal," he said, "vigorous action in 1933 was applied to the problem. Even though some of their acts were inconsistent with others and showed little understanding of how the economic machine worked, and their early measures were partly temporary expedients applied in the 'hope' of getting us through the coming winter, nevertheless they were evidence of vigorous action in an endeavor to find and remove the cause."

"Placing of a moratorium on foreclosures, the rescue work of the Reconstruction Finance Corporation and the Home Owners Loan Corporation, shortening hours to spread work, increasing wage rates, unemployment insurance and old age pensions, adoption of a public works and relief program, insurance of bank deposits and encouragement of building through insurance of marginal risks under the Federal Housing Administration, were all encouraging steps in the right direction that in principle had the support of business men even though the way in which they were applied often nullified in part the good intended."

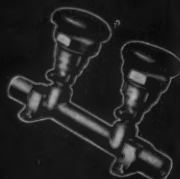
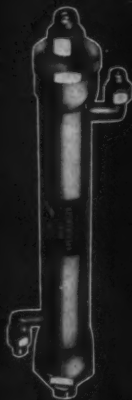
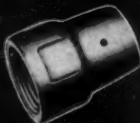
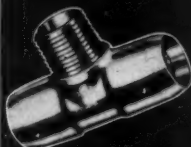
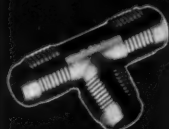
Spirit of National Unity

Mr. Brown said that the "period of economic experimentation ended, at least temporarily, with Pearl Harbor. While the problems we face are now bigger and more serious than ever before, yet at least we have won a spirit of national unity and of cooperative effort which we did not have before. The spectre of unemployment has been banished through the technique of having the government place billions of dollars worth of orders for war materials into the sales hoppers of a relatively small number of large corporations. Temporarily those deep haunting fears have been quieted."

"We have won perhaps nothing more than a breathing period. Let's hope it will be sufficiently long for us to re-diagnose those past ills so that, while there is yet time, preventives can be developed against repeating, after this war, the same mistakes that were so disastrous after the last one and in the great depression."

Functioning

FOR THE "LONG HAUL"



● Mueller Brass Co. valves, fittings and accessories are sturdily and dependably built. They have a well earned reputation for quality and are doubly desirable under present day conditions. Since refrigeration products are becoming more difficult to procure with each passing day, it is most essential that those which are installed be efficient and provided with endurance for the "long haul."

All Mueller Brass Co. refrigeration products are designed and manufactured specifically for mechanical refrigeration work. Tees, nuts and elbows, for instance, are made of forged brass—and many other fittings, bodies, etc. from specially processed brass rod.

If you have a problem, write us and we will do our utmost to help you.

MUELLER BRASS CO.
PORT HURON, MICHIGAN

NEW DRIVE FOR SALVAGE OF PARTS FOR REPAIR WORK

THE Household Refrigeration Section of the National Electrical Manufacturers Association has announced a new drive, urging dealers to speed up the salvage of old parts in accordance with instructions for return issued by the individual manufacturers. The Association also promises to do all it can consistent with the war effort to provide dealers with household refrigerator repair parts.

The announcement states that manufacturers feel that while the repair parts situation will continue to be critical, the cooperation of dealers with manufacturers in returning defective parts will greatly reduce the delay in satisfying the needs of customers. Each manufacturer will carry a statement in his advertising urging dealers to salvage their old parts promptly so they can rebuild them into new repair parts.



Carrier Uses Sheet Board as Substitute for Steel

THE Carrier Corp., Syracuse, N. Y., is using sheet board for ducts and casings in air conditioning installations as a substitute for huge quantities of steel and other critical metals, according to T. M. Cunningham, construction manager of the Corpora-

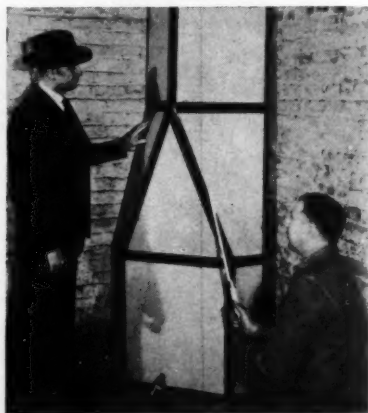
tion. An article on this was published in the January issue of THE REFRIGERATION SERVICE ENGINEER. Below are some illustrations showing some ways in which this material is being used in actual installations by the Carrier Corp.



Construction of ducts with use of sheet metal slip joints.



Showing how sheet board is used in constructing square elbow.



The final installation; showing appearance of duct made of sheet board, finished and installed by the Carrier Corporation.



WE'RE SENDING 'EM EVERY DAY!

No, Adolph, that packing case doesn't, as you might suspect by its shape, contain a coffin. But it does symbolize the end for you! It contains Chieftain refrigeration units and parts, going out to our fighting fronts every day, to help sustain the health, morale and stamina of our battle units. Good food, freshly preserved for our soldiers, will help spell your doom as surely as a well aimed bullet. Chilly dreams, Adolph!

TECUMSEH PRODUCTS CO. TECUMSEH MICHIGAN



Chieftain

QUESTIONS ON GOVERNMENT ORDERS TO BE ANSWERED

A LETTER from Sterling F. Smith, Chief of the Refrigeration and Air Conditioning Section, General Industrial Equipment Division, War Production Board to the Refrigeration Service Engineers Society, points out that the revised order P-126 (published in this issue) may give rise to a great many questions.

He has suggested that members be asked to send such questions as they may have to the National Office of the Society, to be forwarded to his office, where they will be answered.

Acting upon this suggestion members are asked to submit any questions they may have on this regulation and in cooperation with Mr. Smith, they will be answered promptly.

In his letter Mr. Smith calls attention also to the new Copper Order M-9-c, and asks members to submit any questions they may have on this, in order that doubtful points may be settled.

R.S.E.S. Chapter Notes

BOSTON CHAPTER

January 12—A meeting was held in the Manger Hotel. It was decided that Sidney Ashe would be carried on the membership roll for the duration, even though he is now a member of the armed forces. It was also revealed that Ray Perkins, also a member of the armed forces, wished to pay the dues for the current year. His membership, however, will also be carried by the chapter.

Some discussion of the chapter's By-Laws took place with the result that it was suggested the paragraph dealing with annual dues be revised.

A joint meeting with the A.S.R.E. was discussed with the result that Chet Borden be asked to obtain more information on the arrangements.

The nominating committee consisting of Messrs. Pierce, Daisy and Hanspicker submitted their report of the following list of officers proposed for election as the Chapter's new officers: *President*, A. O. Alexander; *Vice-President*, Bertil Stenmark; *Second Vice-President*, William E. Daisy; *Secretary*, H. B. Weeks; *Treasurer*, W. E. Jones; *Sergeant-at-Arms*, A. L. Spencer;

Special Notice

PLANS are in the making for an arrangement to have questions answered on government regulations as they apply to the refrigerator sales and service business. Members who have such questions on Maximum Price Regulation 165 or any phase of price regulations; also on the new P-126 Order, as revised, and the new Copper Order M-9-c are invited to send them to the secretary of the Refrigeration Service Engineers Society. They will be referred to the proper authorities for a prompt answer. Send in your questions NOW.

Chairman—Educational Committee, Leslie W. Pierce.

After a brief discussion, nominations were closed and the selection of the nominating committee unanimously elected. The secretary was instructed to cast one vote for the entire meeting.

LOS ANGELES CHAPTER

January 20—The forty-ninth meeting of the Chapter was held at the Royal Palms Hotel. *President* D. W. Irving called on several of the members present to begin selling tickets for the defense bond drawing, a regular feature of the meeting, the drawing for which is held at its close. The meeting was then turned over to W. W. Allison, International Director, who proceeded with the installation of newly elected officers. Those which were recently elected are as follows: *President*, W. C. Irving; *First Vice-President*, C. O. McClellan; *Second Vice-President*, Ed. L. Glaser; *Secretary*, E. Elwood French; *Treasurer*, Graham R. McLay; *Education*, J. C. Blair; *Sergeant-at-Arms*, V. E. Denny.

Among announcements made by the President was that Harry Mills left for the Navy January 13.

Several new applications for membership were read by the secretary and voted upon by the members.

On the educational program, Mr. McDonnell presented an interesting and educational Technicolor picture entitled, "Unfinished Rainbows," covering the history of

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REFRIGERATION SERVICE MEN

REFRIGERATION SHOP MEN

Three of the largest refrigeration service organizations in the Middle West who are authorized service agents for many manufacturers need, in Chicago, the following men:

REFRIGERATION SERVICE MEN

EXPERIENCED ON COMMERCIAL AND HOUSEHOLD EQUIPMENT
MUST HAVE OWN CAR AND TOOLS

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REFRIGERATION SHOP MEN

GENERAL SHOP EXPERIENCE OR FAMILIAR WITH SHOP REPAIRS ON ALL OR
ANY OF THE FOLLOWING: COMPRESSORS, MOTORS, EXPANSION VALVES,
FLOATS, LATHE WORK, ETC.

Excellent wages, working conditions and opportunity for advancement. Write, giving full experience, qualifications, age, draft status and all pertinent information.

Address

BOX FE-5, THE REFRIGERATION SERVICE ENGINEER
433 NORTH WALLER AVENUE CHICAGO, ILLINOIS

aluminum up to the present day.

Winners of the drawing for defense stamps totalling 45—25-cent stamps were: Bill Commerford and Ray O. Faris.

Al Danielson, field service engineer for the Stewart-Warner Refrigeration Corp., spoke on the parts problem and what his company was endeavoring to do about it.

Mr. Askew stressed the importance of corresponding with the boys in the armed services and as an incentive to increase the correspondence, names and addresses of those in the army will be made available to all members.

CENTRAL CONNECTICUT CHAPTER

At a recent meeting of the Chapter, the annual election of officers took place with the following being elected: *President*, James Felix; *First Vice-President*, Clarence Reidle; *Second Vice-President*, Timothy Moynihan; *Secretary*, Arthur Andreen; *Treasurer*, John Paar; *Sergeant-at-Arms*, Leon Morin.

Following the meeting, a smoker was held at a local restaurant where a pleasant time was had by all.

NIAGARA FRONTIER CHAPTER

December 11—A meeting was held in the home of A. H. Keirn and was presided over by its host and President. On a discussion of the officers to serve the following year, it was decided that due to war emergencies, it would be best to keep the same officers in office for another year. Consequently, each office was considered in turn and motions were received and duly passed to the effect that the same officer be re-elected. These discussions took up the major part of the evening, and the rest of the night was devoted to the annual Christmas party where refreshments and gifts were distributed to all. Everyone had a very enjoyable evening, and went home with a very thorough Christmas spirit.

ONTARIO MAPLE LEAF CHAPTER

December 11—Wm. Marshall presided over the meeting and the roll call showed the majority of officers present. Among discussions which were brought up for the evening, was the proposed stag, arrangements for which had been postponed until this meeting. However, nothing new had been arranged—therefore, any further discussion was held over for the next meeting.



GOING PLACES MR. SERVICE MAN?

Yes—we know—dozens of places! The revised WPB Repair and Maintenance Order No. P-126 will help you to get there with more parts and



THE REPLACEMENT GAS for METER-MISERS

will solve your Meter-Miser Servicing problems.

Be sure to learn all you can about the new P-126 (published in this issue of R.S.E.) and keep it handy for use. Do the same with HERVEEN.

Most jobbers stock HERVEEN—if yours doesn't, write direct to

MODERN GAS CO., Inc.

Manufacturers and Refiners

1084 Bedford Ave., Brooklyn, N. Y.

Ken Wood reported on his interview with the used goods administrator pointing out that some mention had been made regarding licensing of service men. Considerable controversy was aroused over this announcement after which members were asked to show their approval or disapproval of licensing by showing of hands. The result was that the majority were in favor of such a move if properly handled.

Mr. Smallwood outlined the procedure to follow when turning in coupons for extra gas.

Harry Parish reported on the proper method of handling and disposing of used equipment.

It was explained by Wally Smallwood that the proposed speaker for the evening on the educational program had a last minute call to go to Ottawa, and was therefore unable to attend. Mr. Smallwood then proceeded to fill the vacancy with a quiz contest. Teams were picked and the questionnaire got under way. The contesting teams were Hamilton and Toronto. Harry Parish acted as referee. The program proved to be both interesting and instructive.

January 15—Under unfinished business, Bill Marshall broached the subject of the stag party, but on the motion of Bill Sneath, the party was postponed indefinitely.

Wm. Goddard from the plastics division of the Canadian General Electric Co. was the educational speaker of the evening. Mr. Goddard dealt with the subject of plastics showing many samples of the various types and colors with the aid of stereopticon slides. The members were given an idea of the manufacturing process used. The talk was interesting and instructive.

TWIN CITY CHAPTER

January 6—President Phalen presided. One of the first orders of business was the reading of the treasurer's report. The balance, as of January, was very satisfactory. This was the last meeting of the retiring President, and after a vote of thanks had been given to past officers and committees, the meeting was turned over to the new President, Les Ost.

George Klahn read a letter and report on compressor specifications from the National Bureau of Standards, and after some discussion, the Secretary was asked to write the Bureau offering the Twin City Chapter's approval of the standards as read.

◆ WANTED AT ONCE! ◆

SHOP MEN IN ALL BRANCHES OF REFRIGERATION

FOR REPAIRING THE FOLLOWING:

HERMETIC AND OPEN TYPE UNITS

COMPRESSORS

COLD CONTROLS

ELECTRIC MOTORS

MOTOR REWINDING

EXPANSION VALVES

EVAPORATORS

Permanent Positions. Write, Stating Experience

Specify Draft Classification

Service Parts Company 2511 Lake St.
Melrose Park, Ill.

ST. LOUIS CHAPTER

November 19—This meeting was devoted to an inspection tour of the Colonial Bakery. Before going through the plant, Mr. Stewart, the Superintendent, gave a brief talk on why various methods were employed in making bread. The various refrigeration equipment was explained by L. V. Fleiter of the R. H. Tait and Sons Co. The product was followed from the flour in the sacks to the loading in the trucks ready for early morning delivery. Those present agreed the tour a most educational one. Mr. Fleiter was responsible for arranging the tour.

MILE HIGH CHAPTER

January 11—After the usual business routine had been completed, the meeting was turned over to Chas. Land, who spoke on the subject of expansion valves. Mr. Land had made a large size cutaway drawing of an expansion valve which he used to illustrate his talk. His description was most interesting and everyone agreed that they knew more about the function of expansion valves than they had ever known before. The discussion finally led into

various types of valves, which also proved instructive. Members then constructed a refrigerating system using a glass evaporator connected to the condensing unit with plastic tubing. Not only did this tubing appear to be a good substitute for copper, but it proved to be a fascinating subject to those watching the refrigerant circulate through the tubing.

TRI-COUNTY CHAPTER

December 4—The meeting was held in the home of President B. V. Clark. The attendance prize was won by Willis Stafford. The educational program consisted of two pictures—the first, "Target for Tonight," and the second, "Building a Bomber." There was a good attendance present for this showing and the meeting adjourned at 11:00 P. M.

TRENTON CHAPTER

In the first meeting of January held by the Chapter, the annual election of officers took place with the following results: *President*, Earl R. Thompson; *First Vice-President*, Louis Lauria; *Second Vice-President*, George Frie; *Secretary-Treasurer*, Marcel Liberty; *Sergeant-at-Arms*, Michael Wargo.

WATER REGULATORS

Pressure-actuated, renewable seat, $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ " pipe fittings.

SHUT-OFF VALVES

Semi-steel, carbon-steel, double-seated stem, Angle and Globe type.

ALL STEEL GAUGE SETS

Safety ball seats shut off liquid in case of glass breakage.

DEHYDRATORS

Furnished filled with Calcium Chloride, Activated Alumina, or Drierite and Silica Gel.

STRAINERS

Cylinder and Cone types, and liquid line scale trap.

ALL-STEEL LINE VALVES

Compact in design, completely rust-proof, Angle, Tee and Globe types.

CYRUS SHANK COMPANY

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Chicago, Illinois

DAYTON CHAPTER

January 7—The annual election of officers took place in this meeting with the following results: *President*, R. F. Yauch; *First Vice-President*, J. H. Van Riper; *Second Vice-President*, R. E. Wagner; *Secretary*, Delbert R. Goll; *Treasurer*, G. H. Brock; *Board of Directors*, V. F. Horine, J. L. Homan, and G. W. Perrine; *Sergeant-at-Arms*, Chas. Bernholt; *Educational Chairman*, G. H. Brock.

MISSISSIPPI VALLEY CHAPTER

January 5—In the absence of the President or Vice-President, the meeting was called to order by the Secretary. The principal business for the evening was the annual election of officers with the following results: *President*, E. J. Ford; *Vice-President*, F. A. Weatherly; *Secretary*, Ervin F. Meyer; *Treasurer*, W. C. Cawiczel; *Sergeant-at-Arms*, D. S. Brainerd; *Board of Directors*, E. M. Dick, E. J. Soens, C. L. Hartman.

Herman Goldberg was a visitor for the evening and gave an interesting talk on various subjects of vital interest to service men.

Ladies Auxiliary

KANSAS CITY AUXILIARY

In the annual report of the Kansas City Auxiliary, the Secretary stated that twenty-two meetings were held throughout the year. All meetings were held in the homes of members with refreshments being served to both the men and ladies.

Contributions were made to the Penny Ice Fund, the War Chest Drive, and with the aid of the men's Chapter, provided for a family of five at Christmas time. Their annual dinner was held in conjunction with the men in the month of March and two picnics were held during the summer. In addition, the ladies entertained the men with an additional picnic and a Christmas party in December. The officers are to be commended for the fine work they have done toward the upkeep of the Auxiliary's motto "to make life worth while."

NIAGARA FRONTIER AUXILIARY

December 11—This was a Christmas party meeting held in the home of Mabel Keirn. The election of officers was held

(Continued on page 62)

GASKETS

SPEED VICTORY



Write for complete catalog.

CHICAGO-WILCOX MFG. CO.
7701 Avalon Ave. Chicago, Illinois

• Until Victory is won, war orders come first. Today, our gasket service for every refrigeration need is helping speed war production. Under these conditions, delays in filling other orders are unavoidable.

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Wholesale Distributors
Refrigeration and
Air Conditioning
PARTS • TOOLS • SUPPLIES

LAMINATED PLASTIC IS DEVELOPED AS METAL SUBSTITUTE

"YOU can't use that" has become a familiar phrase in business today, with restrictions of such precious war materials as brass, copper, and bronze. "You can use this" is the West Coast's latest boast, with the development and marketing of Durashield, a laminated plastic which is meeting Navy and defense demands for a satisfactory substitute for brass, copper, or bronze nameplates, tool checks, dial faces and similar marking plates on ships, machinery, and metal equipment of every kind.

Durashield is the product of Plastic Fabricators, Inc., 500 Sansome Street, San Francisco, Calif., and is built to meet minimum Navy requirements in the standard grade. Both the Navy and the U. S. Maritime Commission have accepted the product for ships being built at West Coast shipyards, and for use on machinery or other equipment connected with defense contracts.

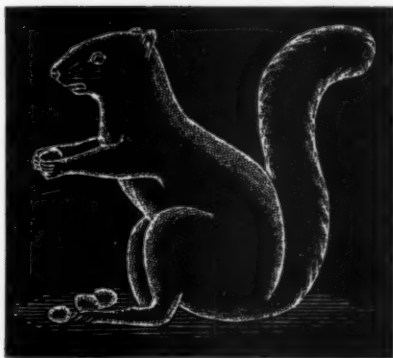
"Durashield is produced by a lamination process," explains Dan Danziger, sales manager of Plastic Fabricators, Inc. "To meet minimum Navy specifications, the center sheet upon which the wording is printed is an opaque cellulose acetate plastic, .010 thick. On each side of this is laminated a transparent acetate plastic, .020 in. thick; making a finished product measuring .050 in. thick. The transparent outside allows a clear vision of whatever may be printed on the center and being laminated in a solid plate resists wear and remains a solid unit."

Another advantage of the new product is the fact that it can be die-cut, stamped, drilled, or otherwise made to conform to any specification as to size and shape.

REFRIGERATORS FOR THE NAVY

IT is more difficult than might be thought to produce a refrigerator that comes up to the requirements of the United States Navy. It must be portable, it must be efficient on board ship, in barracks, on shore, and must function even on a desert isle where electric power just isn't.

The refrigerators turned out for the Navy by the Weber Showcase & Fixture Co. of Los Angeles, meet all these requirements. They work on any kind of electricity. If there is none available, they make their own. The photograph reproduced on the front cover of this issue shows a view of the production line at the Weber plant.



He has it in reserve...AND YOU?

Government spokesmen are warning us that many things, now plentiful, will soon be short or entirely eliminated as the country gets further into its vast war program.

It may happen to THAWZONE... we can't tell. With driers and drying materials already restricted, wouldn't it be wise to get a few extra containers of this "life-saving" fluid to carry you over, just in case...?

The best service engineers are never without THAWZONE. It saves call-backs... gasoline. It's good planning always to have some "spares" in reserve and then fill in as you use them.

Tell it to your jobber.
Buy original factory
packages only.



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THAWZONE

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The PIONEER FLUID DEHYDRANT

For the PERMANENT REPLACEMENT of STRATEGIC MATERIALS



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Saran Tubing by Hodgman is a tough thermoplastic specially made to replace strategic materials such as aluminum, stainless steel, nickel, copper, brass, tin and rubber. It is adaptable for use under high working and bursting pressures and is resistant to most chemicals. Its handling qualities, flexibility and ease of handling make it extremely valuable in installations requiring the transport of oil, gas, air, water and corrosive chemicals. . . . Five type fittings of the same material make it possible to install a complete system with no more tools than a sharp knife and a fitting tool.

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ASSISTANT STORE MANAGER

Large Midwest Wholesale Refrigeration Supply House seeks experienced technical man in executive capacity to take charge of purchasing and city order department. Man with refrigeration experience or graduate of good refrigeration school desired. Must be draft exempt. Write fully, giving age, salary, et cetera.

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WILL BUY any make used automatic and thermostatic expansion valves, water regulators and domestic and commercial cold controls. Mail us list of what you have and we will quote you our best prices.

CAPITOL REFRIGERATION
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JAMISON DOOR CO. ANNOUNCES ELECTION OF NEW PRESIDENT

J. V. JAMISON, JR., president of the Jamison Cold Storage Door Company for the past twenty-five years, has announced that the company's growth has necessitated the following reorganization of executive personnel, effective January 1, 1943:



J. V. Jamison, 3rd



J. V. Jamison, Jr.

Chairman of the board, J. V. Jamison, Jr.
President and general manager, J. V. Jamison, 3rd.

Vice-president, F. H. Wagner, Jr.
Vice-president, F. Oden'hal.
Vice-president, D. K. Mims.
Comptroller, H. S. Morris.
Treasurer, N. E. Weddle.
Secretary, M. A. Draper.

J. V. Jamison, Jr., although retiring from the presidency, will continue to devote his time to the company.

J. V. Jamison, 3rd, has served in all of the company's departments for ten years. He has acquainted himself with every phase of the company's business and is entering upon his new duties exceptionally well equipped. Previous to assuming his new office he served as secretary and treasurer, and during the past two years as executive vice-president.

Fred H. Wagner, Jr., came with Jamison in 1940 in the capacity of general sales manager and will continue to hold that position. Mr. Wagner has been connected with the refrigeration industry in this country and abroad since 1919.

F. Oden'hal entered the company's employ in 1922. His entire business life has been with Jamison, functioning in all departments, principally with the engineering, estimating and quotations departments.

D. K. Mims has been general purchasing agent for the past sixteen years, and will

continue in this position. In recent years he has handled sales in the territory immediately adjacent to Hagerstown, and will continue in this position as well as being assistant to the president.

H. S. Morris became associated with Jamison when Jamison absorbed the Stevenson Cold Storage Door Co. of Chester, Pa., in 1927. Mr. Morris had long been with the Stevenson Company and practically his entire business experience of thirty years has been in the cold storage door industry.

N. E. Weddle, the company's new treasurer, entered the company's employ in 1922 and will continue to supervise the order department and its correlation with production.

M. A. Draper, who has been in the company's employ for twenty years, will continue to direct the shipping department as well as function as the company's secretary.

At present the company's production is largely devoted to the war effort, involving the manufacture of cold storage and insulated doors of every type for use by the Army, Navy, and Maritime Commission, as well as sound reduction doors for aircraft engine manufacturers. There will be no change in the general policies, conduct of the business, or products.

\$\$\$

PENN ELECTRIC PRESIDENT IN TALK TO EMPLOYEES

IN a talk on December 23 to all employees of the Penn Electric Switch Co., Goshen, Ind., Albert Penn, president of the company, discussed the company's position and announced a new Christmas bonus. His talk was in part as follows:

"A year ago we were not certain what would happen with our switch production, nor did we know what would happen with our war work. Last year our total number of employees was about 500. We now have in the company a total of 677, so you see our worrying about some of us being released was unnecessary.

"Each time I come before you I stress one particular point, and that is a plea that we do our work as near perfectly as it is humanly possible. In peacetime if we make some errors, such as putting the wrong name plate on a switch or the wrong diagram in a package, our company gets a 'black eye' from the customer when he receives it. In wartime an error that is made may be a lot more tragic. For instance, we make

USE

VISOLEAK

Ally yourself with the Industry program of CONSERVATION. SAVE refrigerant and time. SIMPLIFY leak detection problems.

VISOLEAK shows you those "hard-to-find" leaks, and is successful with all refrigerants. Use four fluid ounces plus one ounce for each 10 lbs. of refrigerant to treat a system.

4 Ounce Size.....	\$ 1.00
3 Ounce Size.....	1.75
1 Pint Size.....	3.00
1 Quart Size.....	5.00
1 Gallon Size.....	16.00

Buy it from your jobber or write direct to

WESTERN THERMAL EQUIPMENT CO.
5141 Angeles Vista Blvd. - - Los Angeles, Calif.

YOU'RE BOTH

ON THE

Fighting
Front

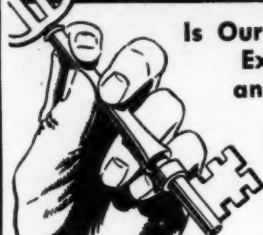


● Yes, sir, Mr. Service Man, both you and the boys in uniform are on the fighting front. Refrigeration's job in this war effort is big . . . in camps, planes, industry, ships and hospitals, refrigeration plays an important part.

It's up to you to keep this equipment in top running order . . . and we're here to help. Write for our new catalog on STANGARD Prime Surface Cold Plate applications, including 24 pages of valuable technical data. Write today!

The Stangard-Dickerson Corp.
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KEY to Our SERVICE



Is Our Long
Experience
and Careful
Attention to
your
orders
for

REFRIGERATION AND AIR CONDITIONING SUPPLIES AND EQUIPMENT

Write for our big catalog,
on your letterhead

The HARRY ALTER Co.

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WE ARE STILL GIVING

BIG VALUE

Present conditions, notwithstanding—you can still get the biggest values at AUTOMATIC.

Whenever the opportunity arises we are passing on to our customers the same big buying values that we always have. You'll profit when you make all your purchases from AUTOMATIC.

The "SPECIAL" shown below is one of many we offer.

SPECIAL!!

WHILE PRESENT
STOCKS LAST

3/4" Forged Brass
Flared Nuts

5¢ EACH
IN 100 LOT
QUANTITIES

Automatic

HEATING & COOLING SUPPLY CO.

647 W. LAKE ST.

CHICAGO

DISTRIBUTORS OF GATES BELTS

FOR REFRIGERATION

some gun firing solenoids, which are used on airplanes. If that device is not made perfectly, it fails to do the job of firing the gun and the pilot is left without his weapon. This may mean, as you can readily see, the loss of a life and the loss of a plane. So now I am stressing again that each simple, individual operation should be done with the utmost care, and particularly so with our war work.

"Last year we wondered whether we could maintain the force we had employed at that time. As I said before, it is gratifying to see that we have not only maintained that force but have added 180 more. This war will come to an end some day. The worry of the management now is what will be our situation at that time. Will we have work for the folks that are now employed? Looking forward to that time, we are keeping our full research force. Quite a number of new items are nearing the production stage and it is our hope that with the offering of these new items in conjunction with our regular production we will be able to maintain our full working force."

Under the bonus plan announced by Mr. Penn, all salaried employees who have been employed by the company one year or more will receive an extra compensation equal to 12½ per cent of a year's pay based upon the salary rate as of December 1, 1942. All hourly employees who have been employed by the company one year or more will receive an extra compensation equal to 12½ per cent of a year's pay based upon the hourly rate in effect as of December 1, 1942, and for the standard work week of forty hours.

DU PONT RECEIVES SAFETY AWARD

A SPECIAL award of honor "for distinguished service to safety" was presented January 4, to E. I. du Pont de Nemours and Company by the National Safety Council. The award was announced by Colonel John Stilwell, president of the Council, and head of a nationwide campaign conducted at the request of President Roosevelt, to "save manpower for warpower." It was accepted by Walter S. Carpenter, Jr., president of the Du Pont Company. The ceremony took place on the Cavalcade of America radio program.

In presenting the award, Colonel Stilwell said that the Du Pont Company had "one of the finest safety records ever made by any industrial organization in the history of the

United States. Our figures show," he declared, "that 88 of the Du Pont plants have had absolutely no reportable accident in at least 18 months. Our records further show that one of those plants previously had established a world's record of more than 11,000,000 man-hours without a reportable accident.

"These achievements are typical results of the safety program Du Pont has so painstakingly carried out for many years. They serve as a challenge and an inspiration to every industry working under the stress and strain of wartime production schedules. They prove that, even in wartime, accidents can be stopped. We who are conducting the campaign to save manpower for warpower sincerely appreciate these safety achievements and the saving in human life they represent."

Mr. Carpenter in accepting the award paid tribute to the Company's employees for making its receipt possible.

"E" FLAG AWARDED TO RANCO, INC.

FOR "high achievement in producing materials needed for war," the Army-Navy Production award, a coveted "E" flag, was presented to officials and employees of Ranco, Inc., Columbus, Ohio, January 19, during an impressive ceremony that attracted ranking state, Army and Navy officials and a near-capacity audience to the Columbus Auditorium.

"We are facing the greatest task in history and you men and women are partners in accomplishing this task," declared Lt. Col. Theodore H. Eickhoff, chief of the industrial service division of the Cleveland ordnance district in presenting the flag to General Manager E. C. Raney.

Taken "E" lapel pins, emblematic of similar pins that were presented later to all employees were presented to three representatives, John S. Boyd, an employee of the firm since 1915; Miss Edna Burleson, elected to represent employees, and Leo Connolly, an employee who has five sons in the Army and one in the Navy.

As a fitting background for the program a huge American flag made in 1864 and containing only 36 stars, was draped across the wall to the right of the stage. It was presented by Ohio congressmen to David Nevins Murray of Portsmouth, O., for his manufacture of cannon balls for the Union Army during the Civil War.

SERVICE ENGINEER

PRACTICAL

always at your service

Today, we are "all" in the service. Our factory and all our resources are concentrated on production of war materials.

Tomorrow, after America fights through to Victory, we shall again focus on the equipment of peace, the Practical Recording Instruments which now simplify and certify the work of all service men who carry them . . . helping those who are left on the home front to take over a bigger job, and to do it easier, without call-back complaints.

PRACTICAL INSTRUMENT COMPANY

2717 N. ASHLAND AVE.
CHICAGO, ILLINOIS



WPB Order No. P-126 (Revised)

Effective January 19, 1943

If this is as good as it looks, it is the most favorable order for refrigeration repair and maintenance to come from WPB since the war started. We congratulate the officers and membership of RSES upon the success which has crowned the long, hard fight for relief. Now, more than ever, in getting the replacement parts you need, you can

DEPEND on BLYTHE

H. W. BLYTHE CO. 2324 South Michigan Ave. CHICAGO

EXPANSION VALVES

Rebuilt or Exchanged

Automatic (any make).....	\$1.25
Thermostatic (any make).....	\$2.75
Water valves	\$2.25

COLD CONTROLS

Domestic	\$2.00
Commercial (low or pressure).....	\$2.25
Commercial (high & low).....	\$2.75

All work done on money back guarantee.

Special price on quantity.

(All fittings must accompany order)

REFRIGERATION SURPLUS DEALERS

2209 N. Karlov Ave.

Chicago, Ill.

Electrimatic Solenoid Valves



Type SL

For Freon, Methyl, Sulphur
Oil, Air and Water

Ask your jobber for details
or write to

The Electrimatic Division
of the Simoniz Company
2100 Indiana Ave. Chicago

DOLE

VACUUM PLATE

COOLING and FREEZING UNITS

C H I C A G O

WEST COAST CONTROL SERVICE

Cold Controls • Pressure Switches

One year guarantee
on all repairs

Original Factory Specifications

UTILITY THERMOSTAT CO.
4011 Halldale Ave., Los Angeles, Calif.

LADIES' AUXILIARY

(Continued from page 56)

and after the election, an enjoyable buffet supper was served by Mrs. Keirn and Christmas gifts were exchanged.

January 11—The new officers were installed in office and the retiring President presented with a box of candy. It was decided the annual banquet would be omitted this year due to war conditions. Supper was served, after which a raffle was held.

TWIN CITIES AUXILIARY

January 5—The meeting was held in Anchor Inn Hall with Mrs. Otto Chermak presiding. The resignation of Mrs. Ford as Secretary was received, and Mrs. L. A. Ost was elected in her place. This was part of the formation period of the Auxiliary, and among resolutions passed, was a decision to name the Chapter the "Twin Cities Auxiliary."

Definite plans are in the making for entertainment programs and the regular routine of business meetings. Many seemed to be in favor of Red Cross work as an entertainment feature of each evening.

The latter part of the evening was devoted to the playing of cards at which prizes were given. A buffet luncheon was served, the food for which was brought by the members. Many Christmas cards were received from other Chapters.

MISSOURI VALLEY AUXILIARY

December 17—Mrs. C. J. Doyle was host at the annual Christmas party, held at her home. The meeting was called to order by Mrs. Flohr, Vice-President. Following acceptance of minutes of the last meeting, the treasurer's report was read and approved. The final report for the year was made, and the books audited. To the Goodfellows, a charitable organization, the sum of \$2 was voted. The following officers were elected: *President*, Mrs. Buckman; *Vice-President*, Mrs. Deits; *Secretary-Treasurer*, Mrs. Doyle; *Sergeant-at-Arms*, Mrs. Flohr.

Mrs. Flohr, retiring vice-president, gave a talk and turned the meeting over to Mrs. Buckman, newly elected president. The meeting was adjourned and the ladies exchanged gifts. The auxiliary presented Mrs. Flohr with a small gift in appreciation of her work in carrying on meetings in the absence of former President Mrs. Worthen.

"WIRE-NUTS" PROVIDE SUBSTITUTE FOR SOLDER AND TAPE

A SOLUTION to the problem of soldering which affects electrical manufacturers, contractors and plant electricians is offered in the Ideal screw-on type "wire-nut" developed by the Ideal Commutator Dresser Co., Sycamore, Ill. Under Order M-48 issued by the War Production Board, the amount of tin and solder is reduced, the use of solder being limited to 50 per cent of the amount used during the base period.

The solderless and tapeless screw-on wire connectors consist of a cone shaped spiral spring insert imbedded in a molded insulation. The joint is made by stripping the wires about $\frac{1}{2}$ in. and screwing the wire-nut on the stripped ends, just like screwing a nut on a bolt. No rubber, tin or lead are used in these nuts as with solder and tape joints, thus their availability is not affected by this order.

The spring insert presses clean threads into the wires, making a perfect joint electrically and strong mechanically. This nut is practically indestructible, the insulation will not melt, and it is puncture-proof at 10,000 volts. The molded shell eliminates any possibility of sharp wire ends protruding and piercing through as is common with solder and tape joints.

NEW CATALOGS AND BULLETINS

THE DOLE REFRIGERATING Co., Chicago, Ill., has issued a new catalog section on "Perfect Refrigeration for Food Storage Rooms." Printed in four pages, illustrated, it points out the importance now of food preservation and tells how Dole Vacuum Cold Plate Evaporators provides an efficient method of refrigeration for such installations as cold storage rooms for cheese, furs and frozen food and locker plants.

OBITUARY—JUDSON C. BURNS

JUDSON C. BURNS, aged 72, one of America's pioneer electric appliance distributors, died January 26 of a heart ailment after a short illness. He had been in the business of selling appliances in Philadelphia since 1910. At the time of his death he was president of Judson C. Burns, Inc., 31st and Oxford Sts., distributor for General Electric specialty appliances in the Philadelphia district which includes Southeastern Pennsylvania and Southern New Jersey.

He is survived by a son, R. Paul Burns, vice president of Judson C. Burns, Inc.

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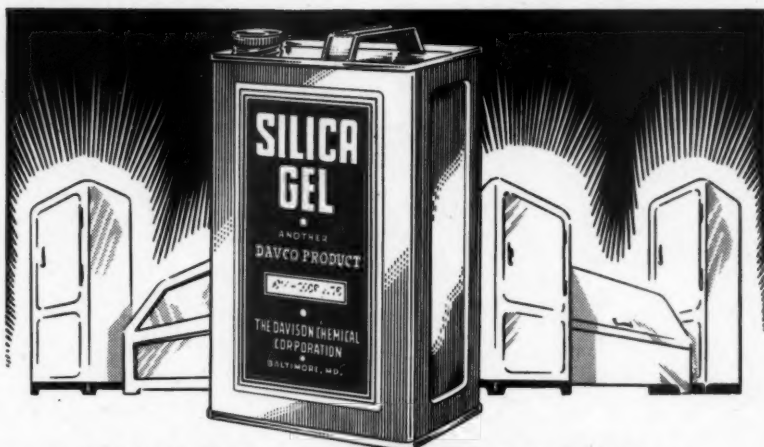
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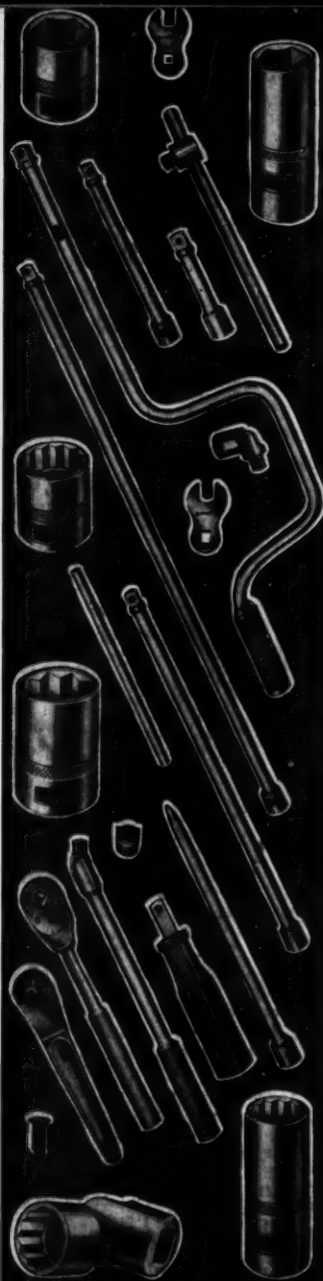
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